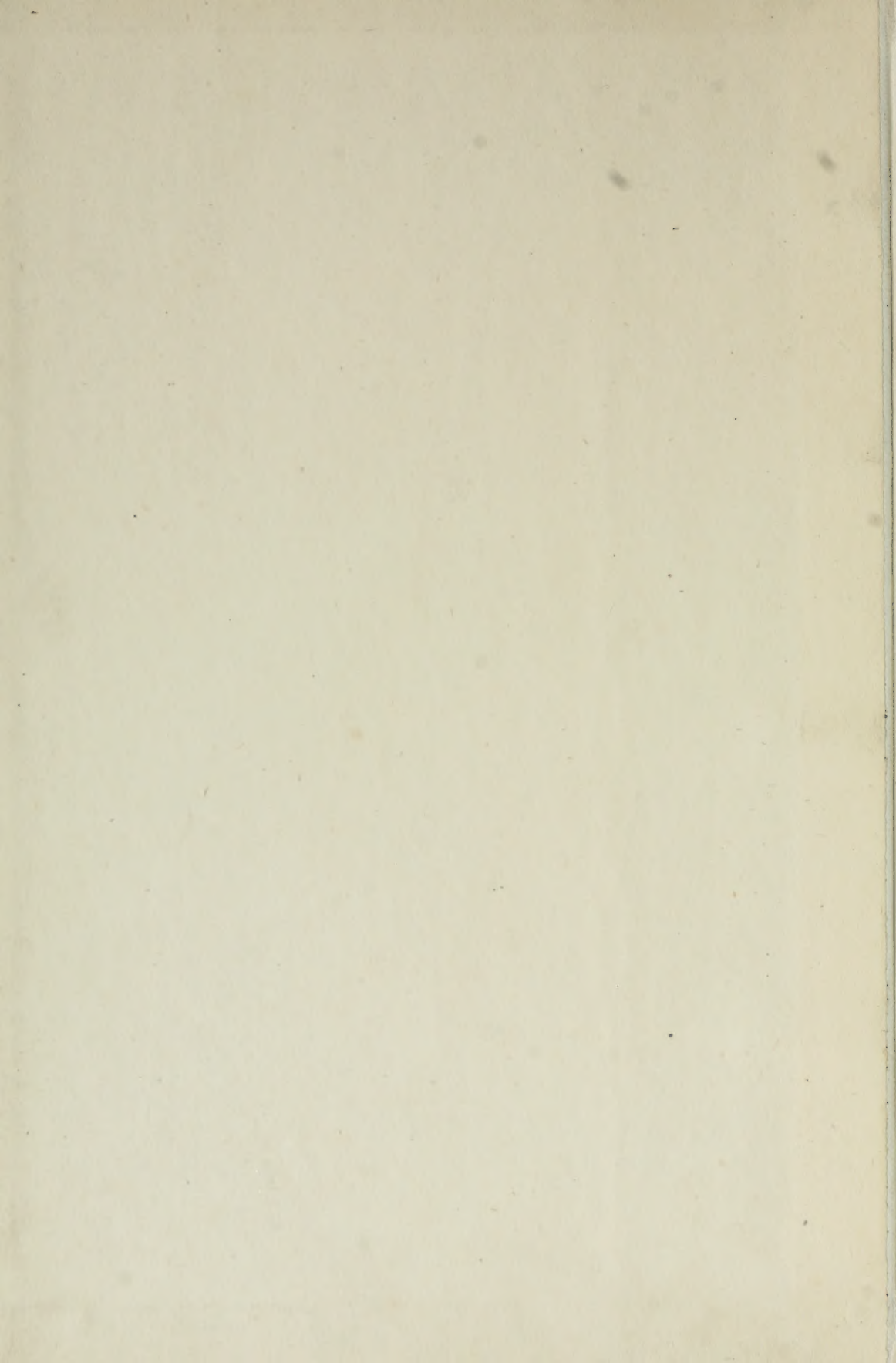


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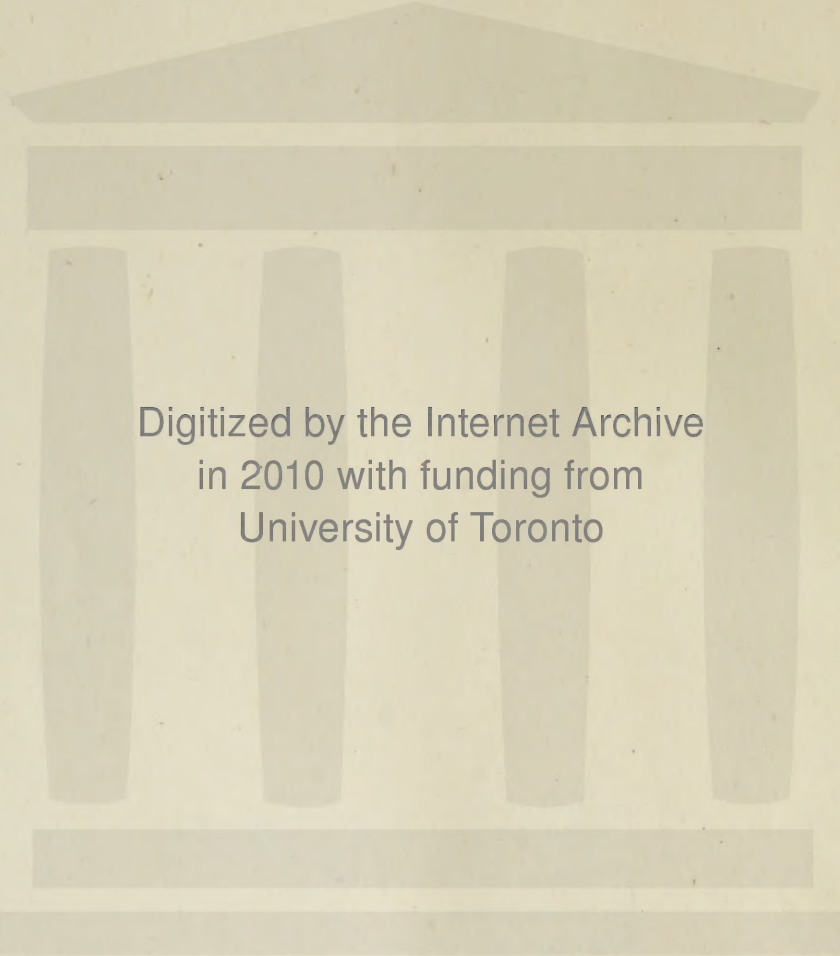
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FOR

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A

Arbitration, address on.....	103
Acetylene, miners' lamp.....	537
Acton, James.....	334
Accident report of Bethlehem Steel Corporation.....	545
statistics.....	601
monetary loss.....	400
compensation, Federal.....	64
Aetna Exp. Co., contract with B. of M.....	483
Aid to Miners, Alberta, Canada, extending educational services to aid coal miners.....	21
Alaska, work starts early.....	340
railroad.....	325
coal leasing bill—editorial.....	148
power available.....	597
meteorites.....	483
Northern Ry. and the Gov't Policy—editorial.....	209
railroad, rapid development expected along route.....	181
mineral output.....	59
prosperous year (1914).....	583
waters charted.....	627
Alien law, Arizona alien law unconstitutional.....	48
Allen, R. C., issues report.....	271
Aluminum, recovery of.....	459
Alunite, at Marysvale.....	428
Ammonia, sources of.....	317
American Chemical Association Convention.....	427
American Mining Congress, San Francisco Convention.....	515
membership—editorial.....	543
group picture.....	586
president names delegates to.....	318
eighteenth annual convention.....	148
officers and committees, 1915.....	250
letter from President Wilson commending.....	8
Antimony, report on.....	549
origin of.....	299
buyers of.....	391
source of.....	401
in National Forest.....	391
duty on.....	456
Chinese office opened in United States for sale of.....	218

Anthracite, use of.....	157
coal case.....	473
coal production decreases.....	488
Annual Report, Director Bureau of Mines.....	47
Announcement, Mining Congress Journal, its policy.....	3
Anode, tabulates accidents.....	269
the Anode.....	165
Appropriations, a contrast—editorial.....	542
U. S. G. S.....	464
editorial.....	333
Arizona, altitudes measured.....	522
mine taxation.....	447
mining schools.....	291
mine tax bill—editorial.....	67
and Mining Congress.....	89
mineral production.....	369
bill for miners' hospital.....	378
resources need publicity says C. F. Willis.....	196
chapter can accomplish much good—editorial.....	214
chapter officers elected; campaign mapped out.....	13
legislation by Walter Douglas, address before Phoenix Convention.....	85
Ashley, Geo. H., photograph.....	121
cannel coal.....	584
Tennessee sandstone.....	487
Pennsylvania work.....	443
Asbestos, United States production.....	326
in Arizona.....	628
production.....	449
Austin, Tex., Geological Survey office in.....	516

B

Bain, Dr. H. Foster, appointed consulting engineer.....	320
Bailey, F. J., appointed chief clerk Bureau of Mines.....	517
Barytes industry booms.....	597
new veins.....	324
Bastin, E. S., Gilpin County report.....	587
enrichment of silver ores.....	298
Behring River Coal Map of Region.....	291
Bennett, E. R., at Tonopah School of Mines.....	266
Bemis Bros. issue pamphlet.....	537
Big Horn Basin.....	340
oil.....	298
work finished.....	622
field work finished.....	528

Big Horn Mountains, phosphate in.....	450	Chemical show causes added interest in minerals.....	521
Bills in Congress—editorial.....	7	Chemicals exhibit.....	448
Black Hawk Mine, fire in.....	330	Chemistry, increased interest in.....	391
Black Hills, Sydney Paige on.....	366	Christmas District mapped.....	269
Boone County, W. Va., report on.....	324	Chino Copper Company makes new record.....	556
Breathing apparatus, experiments with.....	567	Children of operators and miners have same school in West Virginia.....	236
British Columbia, cooperative agreement.....	557	Chromium, effects of war on.....	310
Broad Pass, report on.....	299	Clark, F. W., rock analysis.....	446
Borax, monopoly.....	446	Coal, unclassified lands.....	528
Boston Electric Railway, award for efficiency.....	99	West Virginia output.....	452
Bradley, J. T.....	294	Italian trade in.....	541
Brooks, Dr. A. H., visits Alaska.....	545	Leavenworth district.....	438
goes to Alaska.....	401	strike cuts Ohio output.....	446
Bryan—editorial.....	464	in Wyoming.....	594
editorial referring to.....	385	employes in mines.....	587
Bureau of Mines, F. J. Bailey appointed chief clerk.....	517	cannel.....	584
O. P. Hood acts for director of.....	517	Rhode Island.....	341
English papers compliment—editorial.....	543	New Mexico.....	341
radium.....	440	nation's fuel bill.....	349
three important papers.....	435	Texas.....	324
chemists aid officials.....	427	Nevada.....	321
publications used as text books.....	438	low grade mined.....	320
Aetna contract.....	483	versus gold—editorial.....	149
code of laws.....	455	cost of strikes.....	122
employes.....	608	explosibility.....	390
motion pictures.....	607	Latin America's purchase.....	49
motion pictures.....	588	production short in 1914.....	42
oil work commended.....	586	use in Oregon.....	373
rescue practices.....	626	production.....	376
headquarters changed.....	618	Utah mines.....	403
editorial.....	275	work in Alaska.....	403
exhibit at Panama-Pacific Exposition.....	265	Kentucky.....	42
appropriation—editorial.....	69	situation—Indiana and Illinois.....	22
appropriations for—editorial.....	71	Ohio decrease.....	12
cooperative work.....	374	eastern Ohio situation.....	6
assists police.....	405	coal industry and American Mining Congress—editorial.....	4
annual report of directors.....	47	fatalities, 1914.....	184
Bureau of Standards perfects electrical device.....	539	report on Matamuska field.....	186
Business outlook exaggerated.....	191	statistics on fatalities.....	211
Burchard, E. F.....	312	lands, classification of.....	298
cut.....	312	Columbia University professors discuss mining schools.....	598
Butler, B. S., studies California copper.....	516	Colorado gold production.....	460
Burkinbine, J. L. W., made consulting engineer.....	449	altitudes established.....	435
		river, harnessing of.....	595
		mine yield.....	81
		gold output.....	390
		Fuel and Iron Company Guard Mine.....	172
		commission defers trip.....	173
		school of mines creates Holmes memorial.....	440
		Compensation, Government employes.....	370
		law.....	344
		Competition, editorial.....	331
		Conservation, Governor Tener of Pennsylvania expresses views.....	53
		Concrete houses recommended by Bureau of Mines because durable fire and vermin proof.....	202
		Cooperation, editorial.....	468
		editorial.....	212
		Copper, Butler studies California.....	516
		imports for 1915.....	537
		slump predicted.....	562
		new California data.....	435
		Producers Association.....	618
		in Russia.....	298
		complaints.....	334

C

California, Butler studies copper in.....	516
new copper data.....	435
gold production 1914.....	424
borax.....	446
Mining Bureau, publication of.....	257
Metal Production Association thanks Bureau of Mines.....	587
topographic work.....	587
Cholane coal district.....	277
Chico gold strike.....	170
mother lode.....	395
miners give \$1,000.....	403
oil production.....	384
Carbide lamps, circular on.....	320
Carbon County, Wyo., field work.....	314
Capital, relation with labor—editorial.....	544
Canada issues report.....	401
Canadian Mining Institute meeting.....	91
geological reports.....	322
mining report.....	293
annual report.....	438
Central Railroad of New Jersey guilty in rebate case.....	141

Copper exports.....	150
to neutral countries.....	119
1914 production shows market falling off.....	38
protests to State Department dwindle as exports near normal.....	195
Germany, supply cut off from United States, may learn how to dispense with the ore—editorial.....	214
Course for prospectors, new course added Colorado School of Mines Curriculum.....	57
Cripple Creek, values in.....	541
1915 output estimate.....	153
mining output.....	111
Cryolite, imports.....	449
Cottrell, F. G., appointed to Jury of Awards.....	263
Cottonwood district, report on.....	596
editorial.....	607
Costello, Frank F., death of.....	320

D

Daily Mining Record, Cripple Creek edition.....	260
Danbury Hatters' case—editorial.....	6
Davis, C. A., shale investigation.....	255
resources of peat.....	270
Dawson, Clyde C., on water power.....	593
Day River, John, work on.....	450
Death rate decrease in Indiana mines.....	384
De Kolb, Courtney, on metal prices.....	429
address.....	89
Del Norte District, topographic work in.....	257
Delaware produces iron—editorial.....	73
Dickerson, Senator—editorial.....	607
Diller, Dr. J. S., returns from study Lassen Peak.....	518
California quadrangles.....	587
Dinosaur Monument.....	629
Douglas, Dr. James, testimonial to.....	100
radium.....	76
Drinker, H. L., photograph.....	554
Dunn, Samuel O., address on arbitration.....	103

E

Eastern Ohio situation—editorial.....	6
Ohio strike—editorial.....	276
Ohio strike.....	130
Ellamar, report on.....	452
Elliott, J. F., honor memory of.....	532
Ellsworth, C. E., recalled from West.....	516
Emery, Hon. Jas. E., address.....	101
Emmons, W. H., sulphide ores.....	298
ore enrichment.....	449
Empire District Electric Company, picture of plant.....	436
Employes as operators—editorial.....	149
Engineer Reserve Corps, article on.....	554
Engineering Index.....	281
Engineers protest against law barring them from foremanship in Pennsylvania.....	234
Ethics—editorial.....	387
Epsomite in Wyoming.....	596
Evans, Geo. W., Behring River coal authority.....	255
Everyday language—editorial.....	388
Experiment stations, state participation.....	541
Explosions, report on.....	338
Darton report on.....	315
Explosives, permissible.....	314

F

Fair, Panama-Pacific—geologists win recognition.....	489
questions asked.....	417
Fay, Albert H., address of.....	548
Federal Trade Commission, Franklin Co. request.....	277
Ferris bill, comment by F. H. Short.....	592
First-aid negro team.....	374
college teams.....	452
W. D. Ryan's work.....	448
contests at fair.....	449
workers' military asset.....	599
Illinois Miners' Institute.....	266
contests.....	269
work, women help.....	350
field meet.....	327
First move, the address by W. G. Swart.....	58
Flotation process.....	608
Florida sediments.....	424
Forest Service, relation to mining.....	316
commended.....	622
Foster bill—editorial.....	71
editorial.....	129
editorial.....	146
Foster, Martin D., commends journal.....	125
Ferguson, H. G., visits Round Mountain.....	588
Ferguson, Henry G., investigates claims.....	329
Ferguson, H. G., testifies at Phoenix.....	395

G

Gale, H. S., to Marysville.....	596
Gas, report on.....	449
Gasoline, vapor.....	624
Gas waste, how to prevent.....	260
Geochemistry, soldiers request works on.....	435
Geological Survey maps.....	555
office in Austin, Tex.....	516
complete sets publications.....	599
early efforts.....	620
at the Panama Exposition.....	94
would interest laymen.....	121
Georgia coal.....	320
Gilbert, G. K., great basin work.....	487
Gillett, Representative, criticizes Bureau of Mines.....	159
Gilpin County, Bastin report.....	587
Gold mining as an investment—editorial.....	5
production in 1914.....	63
product by states.....	460
devices to discover.....	619
world production.....	292
editorial.....	332
Philippine output.....	326
United States production.....	81
world's production.....	83
in eastern states.....	367, 373
Utah increase in.....	375
southern deposits.....	376
Alaska production.....	377
Colorado's output.....	376, 390
Goldfield, new finds at.....	517
Government, policy and the Alaska Northern—editorial.....	209
experts—editorial.....	469
editorial.....	276
Graphite production.....	424
Gregory, Prof. Herbert E., Navajo report.....	586
Guide books benefit West.....	339

Guide books bringing out resources of the West published.....	187	Kentucky, Mississippian rocks in.....	446
edition exhausted.....	432	map fields.....	260
complimented.....	426	Kerby, maps of.....	299
editorial.....	606	Knight, Jesse, Mining Congress member.....	255
field work.....	582	Knopf, Adolf, in California.....	449
for President.....	627	Koehler lamp approved by Bureau.....	516
of western routes.....	266		
Gypsum figures break record.....	520		
		L	
H		Labarthe, Jules, joins Bradley and Bruff.....	322
Haldane, W. G., leasing.....	288	Labor, Department of—editorial.....	544
Herty, Chas. H., address.....	617	unions and their responsibility.....	281
Henry, Earl, photograph.....	127	shortage of.....	277
Hewett, D. F., work in Oregon.....	450	shortage.....	174
Hill, J. M., investigates placer deposits.....	293	need of.....	165
placer mine works.....	329	Lake Superior miners meet.....	450
Hoffman, F. G., on mine sanitation.....	272	Lamps, miners use 50,000.....	627
Holmes, Dr. Jos. A., memorial.....	439	Lane, Franklin K., urges leasing and water power bills.....	528
picture.....	449	cancels Aetna contract.....	538
memorial.....	625	Land office, right of appeal.....	461
editorial.....	386	classification board overworked.....	432
photograph.....	360	Lassen Peak, volcanic activity.....	518
death of.....	361	Lassen Peak.....	345
editorial comment.....	363	special bulletin.....	391
Homestake mine, timbering.....	315	Latin America as an export market for coal, by A. T. Marks.....	49
Homestead Law, Kansas secures extension of enlarged Homestead act.....	236	Laws in Pennsylvania.....	441
Homesteads, double.....	315	uniform State.....	437
designated.....	590	revision meeting announced.....	582
Hood, O. P., acts for director Bureau of Mines.....	517	Layland mine, explosion in.....	126
Houtzdale, fault.....	324	disaster.....	189
		rescue—editorial.....	210
I		Leasing, W. G. Haldane.....	288
Idaho, State report.....	374	bill—editorial.....	146
triangulation work in.....	271	Legal decisions.....	132, 220, 284, 328
mining improves.....	471	* 392, 402, 451, 560, 610	
test water power ruling.....	485	Lehigh Coal and Navigation Co.....	343
silver, lead and zinc increase.....	520	Leshner, C. E., photograph, coal statistician.....	257
Illinois, mining laws.....	282	promotion.....	400
dept. of mines proposed.....	129	Library of U. S. G. S.....	324, 487, 627
Immigration after war.....	424	Lignite resources of North Dakota.....	556
Income tax, applied to mining companies.....	585	in North Dakota.....	486
Industrial disputes—editorial.....	67	in Montana.....	322
Indiana, legislation.....	164	Lloyd, E. R., on coal board.....	400
and Illinois coal situation.....	22	Loco gas field.....	588
coal operators explain selling agency plan.....	185	Louisiana sulphur.....	450
Insurance companies consolidate.....	309	oil.....	459
editorial.....	334	Low, Seth, Colorado Commission.....	173
Interior Department building.....	565	Lupton, Chas. B., in Big Horn Basin.....	340
Investments south of Rio Grande hazardous—editorial.....	211	Lyons, D. A., work.....	485
Iowa, coal mine operatives.....	489		
Iron, bacteria.....	539	M	
ore shipments increase.....	528	Mackenzie, A. G., Sec. Utah Chapter.....	405
field work.....	565	Magnesite, shipments of.....	567
production falls.....	438	production of.....	486
estimates for year close.....	430	Manganese, U. S. production smaller than amount imported.....	57
southern deposits.....	315	Mannesmann light permit granted.....	424
exports increase.....	150	Manning, Van H., address by.....	523
product in 1914 fell short 33 per cent.....	33	guest of honor.....	528
		honored by Chicago coal operators.....	549
J		on Anaconda Commission.....	556
Joplin, health conditions.....	163	favored for director.....	442
		interview.....	457
K		editorial.....	468
Kansas, coal.....	624	chosen Director of Bureau of Mines.....	423
mining laws.....	283	as Bureau head.....	381
union labor statute.....	110	urges cooperation.....	
Kelly, Dr. H. A., radium.....	76	western trip.....	589
		Maps found accurate.....	472
		Marble, report on.....	460

Marshall, R. B., inspection trip.....	609	Mining population of West Virginia.....	52
work.....	444	press—editorial.....	333
Mansfield, G. R., phosphate work.....	452	laws, Judge Thompson's.....	389
Marysville, Utah, potash.....	596	code, Thompson's.....	263
McCaskey, H. D., takes vacation.....	379	Mississippi, report on.....	299
explains grouping.....	602	Mississippian rocks in Kentucky.....	446
Chief of Mineral Resources, U. S. G. S.....	256	Mt. Rainier, geological work on.....	588
inspects Survey offices in West.....	553	Mt. Lassen, see Lassen Peak.....	348
western trip.....	472	Mogollon Mines, New Mexico.....	265
McAlester Mine Safety Station—editorial.....	69	Molybdenite, by whom treated.....	442
Mendenhall, W. C., married.....	619	Molybdenum prospecting.....	337
on land classification.....	258	report on.....	320
Memorial Auditorium, Site of Mining Con- gress Convention.....	425	facts suppressed.....	516
picture.....	425	Montana gold output, 1914.....	430
Metals, reports on.....	449	oil.....	298
mines, in East.....	403	lignite.....	322
mining—editorial.....	145	Monopoly—editorial.....	273
Meteorites in Alaska.....	483	Mora diamond.....	586
Metallurgical research and mine safety stations, Foster bill.....	143	N	
Mexican mining tax.....	197	Navajo, Gregory's report.....	586
Miami district, work in.....	337	Neuman, J. J., the Polyporoceae of Wiscon- sin.....	277
Mica, survey report.....	390	New Jersey, geological report.....	628
Michigan College of Mines.....	79	New Mexico coal.....	341
first miners.....	144	zinc.....	374
coal yield.....	144	Burro Mountain.....	366
College of Mines.....	271	Santa Rita quadrangle.....	377
Midwest oil case, decision.....	111	Newhouse mill, picture.....	484
decree reversed.....	151	New York, new mining capital.....	596
Mineral industries, mid-year reports on.....	370	Nickel, U. S. refines most.....	122
industry.....	323	Nitrate dollar exchange.....	516
products on Panama Canal.....	291	demand for.....	312
land decisions.....	478, 566	hunt for deposits.....	403
decision.....	603	Niter, Utah deposits.....	584
reserves.....	324	North Dakota, lands opened.....	629
resources.....	323	North Laramie reconnaissance.....	299
Mine safety stations.....	143	Nevada mining camps' output.....	549
work and West Virginia.....	211	coal.....	321
taxation report, American Mining Con- gress committee.....	34	mine yield for 1914.....	125
dangers—editorial.....	333	camps.....	390
fire to be extinguished; fire has burned sixty-two years in mine of Lehigh Coal & Navigation Co.....	215	new mining camp.....	366
fatalities drop under premium system.....	232	National Nevada, one shoot.....	324
in West Virginia.....	52	O	
study courses, University of Washington.....	21	Official call, eighteenth annual.....	245
manufacturing—editorial.....	605	Oil in U. S.....	368
accidents, violation of law causes many accidents.....	219	shales, Winchester report.....	483
miner saves self after accident.....	227	Manning interview.....	457
Raritan Copper Works publish monthly record of accidents.....	234	Indiana.....	446
Mines, water in.....	100	search for.....	545
screen law for Ohio.....	109	eastern Ohio fields.....	550
Miner's lamp meets approval.....	390	southern Appalachian fields.....	555
Mining Congress Journal criticism.....	228	geologists help locate.....	438
not rival of Trade Press—editorial.....	212	shales.....	255
its policy and purpose.....	3	geologist's tip.....	609
views of Directors of American Mining Congress.....	9, 10, 11	Big Horn Basin.....	298
President Wilson commends, letter from nation's chief.....	8	Montana.....	298
Minnesota School of Mines.....	291	Calgary district.....	271
Mining, State aid to—editorial.....	72	shales in Wyoming.....	340
at the Exposition.....	92	Mexican commission.....	314
editorial.....	68	Ohio mine screen law.....	109
legitimate business.....	120	coal mining, decrease in.....	12
show—editorial.....	471	County, Ky., subject of report.....	528
laws in Pennsylvania.....	53	coal mining.....	74
		Oklahoma health survey.....	452
		mines, examination of.....	266
		oil conservation.....	80
		law.....	82
		Onyx, origin of.....	46
		Ore, marketing of.....	460

Oregon, use of coal.....	373	Producers' Coal Company buys Dering	
ridiculed.....	565	properties.....	488
enlarged homestead act in.....	537	Production costs—editorial.....	465
search for dredging ground.....	436	Profit sharing—editorial.....	461
new folio.....	344	Prospecting, prevention of useless.....	316
1914 mine yield.....	81	Potash, search old lake beds.....	391
Orofin coal fields.....	582	in Spain.....	400
Optimism increasing prosperity in mining		little potash available.....	229
industry—editorial.....	214	boring for.....	429
Osage oil lands.....	341	in West.....	350
Ozokerite.....	628	in Texas.....	343
		study of.....	120
P		Powder River Basin lands classified.....	581
Paige, Sydney, on Black Hills.....	366	Powell, Maj. J. W., monument to.....	314
Palmer, Chase, precipitating agents.....	272	Powder River coal and oil.....	318
mineral waters.....	626	Public lands, application for.....	391
Pan American Scientific Conference, Mining		surveys of.....	395
Congress aids.....	433	Pyrite in Virginia.....	455
Panama Canal, tonnage through.....	443		
Pappoose shaft, picture.....	484	Q	
Parker, Edw. W., coal statistician.....	256	Quicksilver, increase in price.....	384
guest of honor.....	327	in Arizona.....	291
Patents.....	261, 346, 383, 453, 563,	lost mine.....	623
	612	report on.....	567
Peabody mine, State hoisting record.....	289		
Peat resources.....	270	R	
Peele, Robert, article by.....	551	Radium, University of Montana testing ore	33
Perkins, Geo. W., address.....	123	National Radium Inst. makes second	
Permissible explosives, makers of.....	566	shipment.....	198
dispute settled.....	484	stock.....	440
Pensions, industrial.....	290	bulletins.....	599
Petroleum hurts Alabama coal.....	403	operations to end.....	581
rates advanced.....	204	cures tested.....	582
U. S. production.....	215	shipments from Denver.....	270
production.....	150	ore, topographic work.....	266
Pennsylvania mining laws.....	53	cut of mine.....	344
mineral production.....	54	Denver laboratory.....	344
editorial.....	470	report on.....	326
laws.....	441	in Utah.....	320
workmen's compensation law.....	259	study of.....	76, 120
Pittsburgh School of Mines, practical work.....	546	Bureau of Mines demonstration.....	372
Phalen, W. C., on phosphate rock.....	450	Rand mines output for 1914 show falling off	64
Phosphate in Kentucky.....	472	Ransome, F. L., returns from West.....	517
map.....	452	works in California.....	430
in Big Horn Mountains.....	450	Ray Consolidated labor troubles.....	430
increase in Tennessee.....	516	Resources of West brought out in new guide	
survey report made.....	532	book.....	187
rock investigation.....	259	Rhode Island coal.....	341
in Utah.....	345	Rice, G. S., appointed to Jury of Awards... 263	
Placer mines information assembled.....	556	explosion report.....	338
mining, request for data.....	608	Richards, Robt. H., receives medal.....	83
editorial.....	389	Ridicule and legislation aimed at mine	
fossil.....	389	operators.....	231
J. M. Hill.....	329	Rittman, Dr. W. F., photograph.....	116
output.....	320	discoveries.....	117
Platinum, part in munition manufacture.....	550	processes being tried on commercial scale.	193
French embargo on.....	559	process.....	341
production in U. S.....	438	Roberts, Wightman D., on "The Man with a	
embargo.....	581	Job".....	263
exhibit of.....	299	Roderick, Jas. E., Penn. Bureau Mines Chief	79
thefts of.....	629	Rock analysis, Clark's.....	446
news unavailable.....	609	Routt County, Colo., survey.....	318
in Arizona.....	271	Round Mountain, Ferguson visits.....	588
increased prospecting.....	313	Ryan, W. D., first aid.....	448
imports reduced.....	81		
Porcupine Dome, oil possibilities.....	628	S	
Prince William Sound, mines of.....	629	Safety First; Anaconda Co. orders all safety	
Prizes at San Francisco Fair.....	323	devices used.....	201
Price cutting.....	166	beginning and growth of movements—its	
editorial.....	149	purpose.....	15
Prospective Tim—poem.....	169	First-aid book popular.....	230
Prohibition, benefit to miners.....	83		

W

Walsh, Sen. Thos. J., mines exhibit.....	318	Winchester, D. E., reports on oil shale.....	379
Walsh, Frank P.—editorial.....	332	oil-shale report.....	483
Walsh, Frank P.....	338	Willis, Dr. Bailey, at Leland-Stanford.....	368
denounced.....	485	President Wilson, letter commending Mining	
War's effect—editorial.....	333	Congress.....	8
Water power, address on.....	591	Wilson, Herbert M.....	309
address by C. C. Dawson.....	593	cut.....	310
sources along Colorado to be shown.....	198	honor guest.....	320
resources, engineer force.....	254	Workmen's compensation systematized....	555
Boston office.....	254	in Pennsylvania.....	53
steam gauging.....	584	West Virginia law is highly commended..	199
report on Yukon-Panama region of		complicated law in Pennsylvania.....	224
Alaska.....	235	lower rate for aliens attacked by Austrian	
Washington metal production.....	369	Ambassador.....	230
Wealth, distribution of.....	462	Wolframite, Wenatchee production.....	609
Weed, Walter Harvey, on Helena Mining		Wood, G. M., Geological Survey editor.....	534
Bureau.....	287	Wooster, Ohio, oil and gas field.....	541
Wetumpka marble district, U. S. G. S.		Wyoming, Moorcraft district.....	271
makes map of.....	257		
West Virginia Coal Operators' Assoc.—			
editorial.....	73		
mine fatalities.....	52		
White, David, inspects field work.....	630		
inspection trip to San Francisco.....	556		
Wisconsin publications.....	277		
Withdrawals.....	326		
and restorations.....	619		
to June 30.....	486		

Z

Zinc, better prices—editorial.....	68
in copper ores.....	311
Australian.....	298
smelters blow in.....	436
letters concerning.....	443
importers confer with McAdoo.....	448
lean portions of mines worked.....	428
New Jersey figures.....	366
Tennessee's production.....	373
in New Mexico.....	374

THE MINING CONGRESS JOURNAL

VOL. I

SAFETY—EFFICIENCY—CONSERVATION

No. 1

OUR MISSION

TO reduce, so far as is humanly possible, the number of killed and injured in mining operations;—to provide for the widows and orphans created by unavoidable accidents through a system of workmen's compensation, fair alike to the employer and the beneficiary; to conserve, so far as is economically possible, the present annual waste of two hundred million tons of coal; to stimulate the production of gold in order that the parity between basic and credit money may be kept at such ratio as will insure stability without restricting our circulating medium; to create conditions under which the supply of commercial minerals may meet every demand of commerce and industry; to maintain a high scale of wages, create the best possible conditions for the workman, leave a fair profit to the operator, the lowest consistent price to the consumer,—and above all, to foster a perfect co-operation between all classes interested in the mining industry. The American Mining Congress solicits the support and co-operation of all who approve these purposes.

JANUARY, 1915

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The Mining Congress Family

Those who in different lines of enterprise are directly or indirectly interested in the prosperity of the mining industry.

Those who mine.

Those who use mine products.

Those who transport the production of the mines.

Those who furnish the machinery and supplies used in these operations.

All have a mutual interest and each can serve himself by serving the others.

All are interested in the highest development of the mining industry.

All are interested in the efforts of the American Mining Congress to better its conditions; each can help himself indirectly by helping the others.

Will you join the Mining Congress family, each member of which is, so far as not to conflict with good business judgment, helping those who are helping the business upon which you depend? Why not?

The American Mining Congress

Majestic Building, Denver, Colorado

Munsey Building, Washington, D. C.

THE MINING CONGRESS JOURNAL

JANUARY	CONTENTS	1915
ANNOUNCEMENT		3
THE COAL MINING INDUSTRY AND THE AMERICAN MINING CONGRESS . . .		3
GOLD MINING AS AN INVESTMENT		5
THE DANBURY HATTERS CASE		5
EASTERN OHIO SITUATION		6
BILLS IN CONGRESS		7
MINERAL PRODUCTION COMPARISON		7
PRESIDENT WILSON COMMENDS MINING CONGRESS		8
VIEWS OF OUR DIRECTORS ABOUT THE MINING CONGRESS JOURNAL. (Illustrated)		9
DECREASE IN OHIO COAL MINING		12
CALIFORNIA MINES BEST YEAR SINCE '64		12
ARIZONA'S CHAPTER		13
SAFETY FIRST. (Illustrated)		15
THE ROAD TO ATTAINMENT		21
WASHINGTON MINE STUDY COURSES		21
ALBERTA AIDS MINERS		21
THE ILLINOIS AND INDIANA COAL SITUATION. (With Drawings and Comparative Tables)		22
U. S. OUTPUT OF IRON ORE FALLS OFF		33
MINE TAXATION.—AMERICAN MINING CONGRESS COMMITTEE REPORT . . .		34
DECREASED U. S. COPPER PRODUCTION IN 1914		38
EXCERPTS FROM PRESIDENT SCHOLZ' ANNUAL ADDRESS		39
SHORTAGE IN COAL PRODUCTION		42
METALLURGICAL RESEARCH AND MINE SAFETY STATIONS		43
EXCERPTS FROM ANNUAL REPORT OF DIRECTOR OF BUREAU OF MINES . .		47
ARIZONA'S ALIEN LAW UNCONSTITUTIONAL		48
LATIN AMERICA AS AN EXPORT MARKET FOR COAL, By ALFRED THOMAS MARKS . .		49
WEST VIRGINIA'S MINING POPULATION		52
RETIRING GOVERNOR TENER'S MESSAGE. (Conservation, Workmen's Compensation, State Constabulary)		53
PENNSYLVANIA'S MINERAL PRODUCTION		54
RECENT LEGISLATION AFFECTING THE ARIZONA MINING INDUSTRY, Address by WALTER DOUGLAS, Bisbee, Arizona		55
THE FIRST MOVE, Excerpts from Address by W. G. SWART, of Denver, Col		58
THE PROPER ADVERTISING OF MINING OPPORTUNITIES, Excerpts from Address by DR. JAMES TALMAGE, Salt Lake City, Utah		60
LARGE SILVER PRODUCTION		62
GOLD PRODUCTION IN 1914.		63
FEDERAL ACCIDENT COMPENSATION		64



CARL SCHOLZ
President American Mining Congress

THE MINING CONGRESS JOURNAL

PUBLISHED MONTHLY BY THE AMERICAN MINING CONGRESS
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ANNOUNCEMENT

As a means through which to further its work looking to safety, efficiency and conservation, the *American Mining Congress* presents to you the first issue of THE MINING CONGRESS JOURNAL.

Its purpose will be to keep our members better informed concerning legislative matters, both at the National Capital and in the various state legislatures; to carry information concerning important legal decisions and administrative rulings of interest to the mining industry: to carry discussion of the economics of mining and to demonstrate the real relation which exists between mining, agriculture, manufacturing, transportation and commerce. Its pages will be devoted to the economic, administrative and commercial, rather than to the technical phases of the mining business. It will devote itself especially to what may be termed, "Mining Politics," to the creation of those conditions under which both the professional and practical mining man may operate to best advantage. It will urge a better cooperation on the part of the Federal Government with the mining industry, but will always stand against any governmental interference or competition with private enterprise. It

will stand for the highest individualism, believing that the fullest development of human character should always take precedence. Mining is a natural business. Waste in mineral production places a burden upon every individual in the nation. THE MINING CONGRESS JOURNAL, as the mouthpiece of the nation's organized effort in behalf of mining, will stand against economic waste of the natural resources and of the productive forces which make them available for the market. It will call particular public attention to the greater necessity of conserving those resources which once exhausted can never be reproduced. And it will urge special attention to the greater importance of conserving those natural resources which are so located as to be available to the centers of population, as against similar resources so remotely located that their transportation to the region of demand would make their use economically impossible. The accomplishment of these ends can only result from a great cooperative movement, in which all those who are interested shall form a part. THE MINING CONGRESS JOURNAL offers its service as a special means through which this broad cooperation may be made effective. We

solicit from our readers concise statements for publication, and will welcome any suggestion through which the JOURNAL may be made of greater use in bringing about that perfect cooperation which makes for the highest development of national character.

THE COAL MINING INDUSTRY AND THE AMERICAN MINING CONGRESS

The coal-mining industry is primary to all the activities of mankind and essential to its comfort. Without coal, railroad, steamship lines and manufacturing would be impossible. Why is it then, that this primary industry is so constantly in a depressed and insolvent condition? It is not because there is a dearth of demand for the output of the mines; but is due to the suspicion, distrusts, doubt and lack of effort on the part of the leading men engaged in this industry to try to bring about economic adjustments. These men are possessed of high intelligence, are broad-minded in civic and other matters, but many of them seem to be afraid to act with a national association, the chief and only purpose of which is correction through association and cooperation, of those economic questions which have brought the coal mining industry to a state of distress that imperils the solvency of all who are engaged in it.

The coal mine operators of the United States are confronted by a situation that, statistically, shows that they are, as a whole, insolvent. Thirteen of the States show, according to the census report for 1909, that the amount of money received for the coal put out was not equivalent to the amount expended for putting it outside of the mines. It is also shown that in those States where the industry is considered by the public to be the most prosperous the return on the capital investment has been but a fraction over three per cent. Shall this industry, the product of which is so vitally essential to the industry, and commerce and transportation of the country and as well of the comfort of the inhabitants, with the great risks which are inherent in coal mining be less remunerative than if the

capital invested in it were deposited in a savings bank?

How shall this economic condition be corrected. Certainly it will not be done by individual effort, and effective cooperation seems to offer the only means of correction. The American Mining Congress has been recognized by a considerable number of coal operators as an organization best meeting the requirement of a capable staff of officers, having a recognized standing among legislators, an accumulation of information that it would require years for any other organization to acquire and a connection with other branches of the mining industry which makes of it a national organization. All these factors are essential to achievement of desirable results for the mining industry, whether it be of coal or metal mining.

The mining industry is, in a sense, a unit. It has, with but slight variations, like problems to solve, like conditions to conform to. It is subjected to like economic crises and difficulties. It should be organized as a unit, with sections or its members that will line themselves up on divisions that naturally divide themselves according to the nature of the particular work in which its members are engaged. This should be gold, silver, copper, lead, zinc, tin, clay and coal mining; but all these several units should get together once or more a year for the purpose of considering and discussing and agreeing upon such matters as are particular to all yet peculiar to each of the sections. The association of the whole body would lend aid and support to the efforts of any one section in State or National legislation.

Another question. Why have these men not been associated heretofore? It is sad to say it, but it is the truth, that it is because of a fear that under the Sherman law they would be liable to fine or imprisonment, or both, for associating themselves together for the correction of economic evils from which all suffer.

What is the fact? In a recent decision of the United States Supreme Court, in the National Watch Company case, it is declared that, under the "rule of reason" formerly announced by the court,

the purpose and intent of the Sherman anti-trust law is to prohibit those acts and actions through association that are inimicable to the public welfare and that it is not the purpose, nor intent, of the law to prohibit associations of men engaged in a similar industry for the purpose of correcting economic evils from which they may suffer nor to prohibit association for the purpose of advancing the particular industry in which they may be mutually engaged.

This is a recent decision, but it points the way, promises immunity from penalties and threats of punishments, offers encouragement and dissipates fear of penalties for mutual association for industrial welfare so long as that welfare is sought for by association and cooperation, and that does not infringe upon the lawful rights of the public to obtain those necessities which it is the business and purpose of producers to provide at a fair price.

Think this over; but think it over with a view to the fact that the American Mining Congress is an organization already formed, that it has perfected machinery now ready to serve, that it is willing to serve promptly and that its only requirement is that you shall become a member and thereby help, through cooperation, to achieve what it may undertake. It is not perfect; nothing of human make is perfect except the multiplication table—but whatever faults it may have can be corrected, and will be corrected, if you and all others who earnestly desire a real and permanent correction of coal-trade evils will join your efforts with those who are already members and cooperate to bring about those conditions from which all will profit and none will suffer.

GOLD MINING AS AN INVESTMENT

The recent bonanza strike in the Cresson Mine at Cripple Creek, Colo., has again called public attention to the great possibilities of mining. Other bonanza strikes have recently been made in other sections of the Rocky Mountain West and if these discoveries shall develop as they now seem to give ample

promise, another era of speculative mining will undoubtedly result. If the investments thus induced shall be directed into proper and safe channels, the result will be of untold benefit. If, upon the other hand, these investments shall not be intelligently made, the results will not be at all commensurate, and in many instances the mining industry will be damaged.

Intelligent, persistent, development work has seldom failed to produce results. A phenomenal gold discovery has usually been followed by a reign of speculative mining and disaster to the investors, followed by a period of depression which has closed all but the high-grade and the well-developed mines, and has prevented legitimate mining prospects from securing sufficient capital for necessary development work.

While the gold production of the West has fallen off during recent years (the slight increase of 1914 production over that of 1913, furnishing a very gratifying exception), it will be noticed that the greater part of this production has come from a few high-grade camps, and that in the smaller low-grade camps there has been a marked decrease.

A given production from a low-grade camp is very much more to the advantage of the locality than the production from a high-grade mine, because of the fact that so large a percentage of the total output is spent in the community for wages and supplies and machinery. The value of gold production as a basis for monetary credit is the same to the country at large, whether produced from high or low grade ores, but the value to the community of a million dollars in production from a mine where three-quarters of a million is spent for labor and supplies is very much greater than from a high-grade mine from which but one-quarter of a million is spent in production costs. Not only this, but the low-grade mine is more likely to be continuous in its operation and in consequence furnish the basis of more staple and continuous prosperity. The high-grade mines will take care of themselves. They can operate in spite of ore thieves, unjust labor conditions, legislative restrictions or extortionate taxes.

They can even continue operation after being robbed by thieving promoters. Any one of these hindrances is likely to prove fatal to the operation of the low-grade mine. If the West is to prosper as it should, and as the industrial life of the nation demands that it should, it must see to it that the laws which control mining operations are fair to the operator and that the outside investor in mining stocks shall be guaranteed that his money be honestly and intelligently spent in development work. How can this be accomplished? No single answer can be given to this question. The continued vigilance of all the people interested will be necessary to accomplish this result. Every state must have its organization ready to give honest and intelligent information about any proposed mining enterprise. Eastern investors should be given an opportunity to see the pitfalls in mining without learning by bitter experience.

THE DANBURY HATTERS' CASE

The decision of the court of last resort sustaining the award of damages in the now celebrated Danbury Hatters' case may be expected to have a wide-spread influence among employers and labor unionists as well.

One probable result of this decision by the United States Supreme Court, which fastens monetary responsibility and liability on those who lead as well as those who follow leaders in carrying on coercive campaigns with violence, is a necessity for the incorporation of labor union organizations as a means of limiting the liability of members. Otherwise members who own or expect to own property will be inclined to withdraw from such organizations.

Some years ago a labor union man in Pittsburgh transferred his home to a son in order to forestall what he believed would be a foreclosure on a judgment awarded to an employer against it—although this was never for a moment contemplated—and was driven out of his own home and died in poverty as a result, the son keeping the home because it had been deeded to him for "one dollar and other valuable considerations." This man

was John Phillips, a one time prominent window-glass blower and an enthusiastic Knight of Labor worker. The employers were Brace Bros., laundrymen, who secured the first judgment ever granted against labor and strike leaders in this country. Judge Jacob F. Slagle, of the Allegheny county court of common pleas, rendered the decree after one of the most learned and precedent-making decisions ever rendered, a decision which has been cited in every case that has since come up on like statements of fact.

Dean W. R. Crane, of the School of Mines, State College, recently delivered an address on the coal business of Pennsylvania in which he said that the day is not as far away as many believe when Pennsylvanians will have to pay such a price for their coal that many will not be able to buy it at all.

"The easily mined coal," said Dean Crane, "is being rapidly exhausted. After this is all taken out the less pure and the thinner seams, lying far beneath the surface, will be worked at such a cost that the price must be doubled, and perhaps trebled. With the increase of cost there must be an increase of price."

Dean Crane quoted statistics showing that one-half of the coal output of the country is produced in Pennsylvania, and that this has been so long the case that the amount yet to be mined has declined much more rapidly than in other States that have since been developed.

THE EASTERN OHIO SITUATION

From a state of "watchful waiting" there are portents that there is to be a muss in Eastern Ohio between the operators and miners. Since last April the miners of this district, which in 1913 produced close to 15,000,000 tons of coal, have been on strike, the strike developing out of that semi-liquid state called "suspension" at the expiration of a wage scale agreement.

The operators of this district have for many years been among the warmest friends of the miners' union, but they now feel that it is absolutely necessary to attempt to utilize their properties. The

companies that operate in this district all own large acreage, some of them as much as 35,000 acres and few of them less than 10,000. These properties have been idle for almost a year and the operators insist that they cannot pay more than 44.46 cents per ton for the digging of the coal. The miners have insisted upon 47 cents the ton for run of mine coal. This demand is predicated on the language of what is known as the Green anti-screen law. This law was introduced in the State legislature by William Green, for a number of years an officer of the miners' union in Ohio, and now secretary-treasurer of the United Mine Workers of America.

Some of the operating companies have arranged for coal acreage in Logan county, West Virginia, and will begin development there, allowing their acreage in Ohio to lie fallow until such time as it can be disposed of or the miners are willing to recognize that capital must have wages as well as labor. One of these companies is the Purselglove-Maher, and another that has been negotiating for a large acreage in the same county across the river is the Lorain Coal and Dock Co., which is the largest owner of acreage in the Eastern Ohio district. Both are heavy lake shippers, and have been obliged to buy coal for the 1914 lake shipping season to meet their contractual obligations and to take care of demands for their own docks in the northwest.

Now it is tentatively proposed to undertake to operate their Ohio mines on the open-shop method; that is, they will offer to the miners who are willing to work union regulation treatment, making no distinction as between members and nonmembers of the union, and will pay them for all coal that passes over a 1½ inch screen, and also for all coal that passes through such screen, the amount so to be paid to be the exact equivalent of the amount paid in the Pittsburgh district, with which they come closest into competition in the lake and general markets.

This question promises to be one that

will develop considerable interest in the forthcoming convention of the miners at Indianapolis.

BILLS IN CONGRESS

There are now before Congress numerous bills which would be of vital interest to mining, but the remoteness of their serious consideration renders unnecessary any extended reference.

The contest in the Senate over the administration ship purchase bill seems likely to prevent the consideration of even the appropriation bills, the failure to adopt which will make necessary the calling of an extra session. Under these conditions there is small reason to fear the enactment of bad, or to hope for the enactment of good, bills during the present session of Congress.

MINERAL PRODUCTION COMPARISONS

The Geological Survey statistics for mineral production for the year 1913 in the United States compared with the figures for 1912 show some interesting comparisons.

Among the states showing the largest increases are the following:

Pennsylvania	\$60,667,106
Oklahoma	26,554,690
West Virginia	19,792,821
Minnesota	19,141,804
Ohio	10,461,005
Texas	8,869,895
Illinois	8,156,354
California	1,512,320

Michigan suffered from a big strike during 1913 and registered a decreased production of \$7,919,275. Missouri shows a decrease of \$4,313,462. Among the other states showing decreases are:

Colorado	\$3,873,118
Alaska	3,096,734
Montana	2,313,817
Wisconsin	1,739,837
Nevada	1,269,744
South Dakota	547,829

PRESIDENT WILSON COMMENDS MINING CONGRESS

LETTER FROM NATION'S CHIEF EXECUTIVE READ AT ANNUAL CONVENTION IN PHOENIX—CREDITS ORGANIZATION WITH NOTABLE ACCOMPLISHMENTS

The following letter from President Wilson to the members of the American Mining Congress was read at the annual convention of that body held in Phoenix, Ariz., December 7-11, 1914. The President pays tribute to the work of the Mining Congress and its part in advancing the interests of the mining industry generally and deals with some of the problems connected with mines and mining. The letter follows:

To the Members of the American Mining Congress:

I regret exceedingly that, owing to the press of circumstances, it will be impossible for me to greet you in person at the seventeenth annual session of the American Mining Congress at Phoenix, Arizona.

I am well aware of the important part played by your great organization in the creation of our Bureau of Mines and am sure that the good work of that bureau in attempting better to safeguard the lives of the two million men employed in the hazardous mining and metallurgical industries will continue to redound to your credit, as well as to the credit of the bureau itself.

It will always be a tribute to your foresight and energy that this new Federal organization in the short period of its existence, with the kindly cooperation of state and their agencies, has been able by persistent and intelligent effort to turn an isolated local movement for greater safety into a great national movement for "Safety First" and has already gone beyond the mining industry of the country. I venture to say that thousands of lives have been saved by that

movement and that many thousands more will be saved in the future.

Gratifying as the results of this life-saving campaign may have been, however, there is still vigorous work for your congress to do. I am informed that, during the last year, more than three thousand men were killed and one hundred thousand injured in the mining and metallurgical industries of the country. At the same time, those in authority tell me that, from their observation and experience one half of such deaths and three-fourths of such injuries may be regarded as easily preventable.

I suggest this situation as an opportunity for further endeavor on your part to cut down this excessive toll of death and injury. I can assure you of the fullest cooperation of all the proper governmental agencies also of my earnest desire for your active and continued assistance.

There is one other problem connected with the mining industry in which the Federal Government is vitally interested and that is proper conservation and proper use of the mineral resources of the nation. I realize that, you too, are interested in this problem and I wish merely to call it to your attention because of its fundamental importance to the present and future prosperity of the nation, I am happy to say that the profligacy of the past in the use of these resources is not being continued, on so large a scale. There is, however, great opportunity for further reform along these lines and in this your organization can be of invaluable service.

Sincerely yours,

Woodrow Wilson.

VIEWS OF OUR DIRECTORS ABOUT THE MINING CONGRESS JOURNAL

PRESIDENT CARL SCHOLZ

The officers and directors of The American Mining Congress deem it very necessary to place before our membership regularly all matters of importance to the mining industry in order to obtain the cooperation and assistance of the membership in the administration of its affairs. It is quite a task, and also a great responsibility, for your officers and directors to proceed with matters of so much importance without some expression on the part of our members, and in order to obtain the views of the members it has been decided to publish the MINING CONGRESS JOURNAL, which will be sent to the members so that each man may know of the matters which are under consideration and make comments on the proposed action or direct the officers as to what, in his opinion, should be done.

With a membership so widely scattered and interests so greatly diversified, it would be unreasonable to expect that the views of all members have been met, and it is believed that through this monthly publication more frequent expressions from the membership will be obtained and their interests will be more efficiently served.

Trade papers have certain reasons for their existence and most of them serve special lines—some are of interest to the operating official; others treat more particularly the commercial, and still others the financial end; some are intended for coal, others for metal mining. The MINING CONGRESS JOURNAL is not to take the place of any of these trade papers, and will be confined to the publication and review of proposed legislation, legal decisions, and administrative rulings of interest to mining men, and a general survey of the Mining Congress work. It does not cater to or represent any section or set of men; it stands for justice

and fairness to the mining industry at the hands of the National and State Governments. Its aim and purpose is by cooperative work to improve mining conditions, and to place the industry in its deserved position.

The earnest support of our members is cordially solicited.



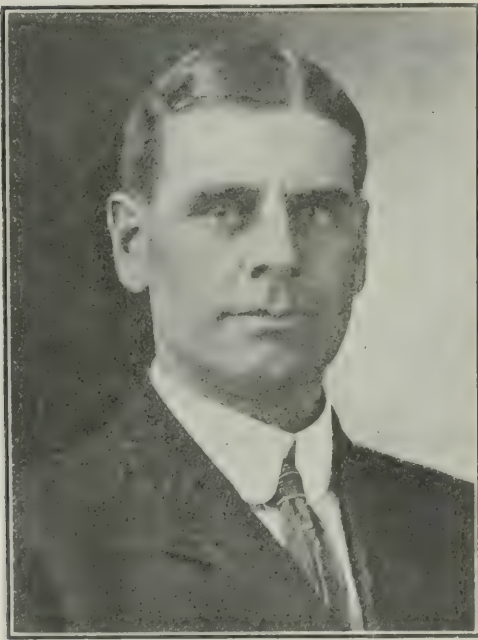
DR. JAMES DOUGLAS

DR. JAMES DOUGLAS, NEW YORK

I think the decision will prove to be of incalculable value to issue at stated periods a journal which will advise the mining interests throughout the country of legislation actually effected, or of legislation proposed and still open to discussion. It is so much better to excite discussion on pending legislation than to have to bear the brunt of mistakes made by hasty action. While the MINING CONGRESS JOURNAL should be scrupulous in analyzing all statements made in it, it is clear that

men actually engaged in mining and metallurgy are more competent than untechnical laymen to foresee the effects of a good deal of the injudicious and unnecessary enactments effecting mining which are instigated by altruistic motives or purely class interests.

I believe in Arizona the idea of the JOURNAL as a medium for the discussion of such subjects has been hailed with the greatest enthusiasm, and I hope that the same will be true of every one of the local chapters.



GEORGE H. DERN

DIRECTOR GEORGE H. DERN, SALT LAKE CITY, UTAH

The MINING CONGRESS JOURNAL ought to prove a valuable publication, in several respects.

There are many men engaged in the mining industry who are vaguely conscious that there is something wrong with the business. They feel that something needs fixing, but they do not know just where the trouble is. The JOURNAL will help them analyze the situation, and show them what is the matter.

There are many others who are vi-

vidly aware of certain evils and abuses, but they do not know what to do about it. The JOURNAL will show them the remedies, with instructions for use.

There is a third class of people, including manufacturers, merchants, bankers and other business men, whose prosperity is tied up with that of the mines. These people, who are thus indirectly interested in mining, need to be educated as to the problems of that industry, and they should be made to see that what helps or hurts mining will help or hurt them. The JOURNAL should have a wide circulation among this class, and by conducting a campaign of education among them, enlist the active support of their influence.

When I say the JOURNAL will do these things I really mean that the American Mining Congress will do them, through the medium of this JOURNAL as its official organ.

A pressing need is to convince all those who are directly or indirectly interested in mining that the American Mining Congress is playing an important part, and is serving its constituency well. One only needs to come into close contact with the actual work of the organization to appreciate that it has developed a strong influence, and is performing a service of high value.

The Congress needs and deserves a greater measure of support than it has so far received. Doubtless it will get that support when the people whom it serves become educated as to its objects and results. Such an education can best be brought about by means of a monthly publication such as the one now being started.

DIRECTOR SAMUEL A. TAYLOR, PITTSBURGH, PA.

I think there will be a great field of usefulness for a Mining Congress journal specially devoted to the dissemination of information pertaining to legislative action and judicial or other decisions on matters in connection with mining. In carrying out the



SAMUEL A. TAYLOR

foregoing suggestions I believe the journal should be published, as it would likely be, in Washington, D. C., for by so doing a closer and more intimate relation to the legislation and the decisions would be secured. At the same time by publishing in the journal the thought of the men prominent in the mining world and considered authority on the subjects they would discuss, and the bringing of the information, thus secured, to the attention of legislators and others interested would wield a greater power than at any other location.

Moreover the JOURNAL being, as it will be, the spokesman of the American Mining Congress, should have a great influence in shaping proper legislation, for its statements should pass as having the same unselfish desire as the Congress itself to further and advance the best interests of the entire mining industry.

The time is opportune for the launching of such a journal; the questions of safety, efficiency, welfare and conservation, of both men and property, are questions which are now forc-

ing themselves upon the attention of legislators and the mining industry in such a way that a journal of such an unbiased nature as would be published by the American Mining Congress should redound to much good in the proper solution of these problems.

In conclusion I wish to say I believe the project a very timely and worthy one and that it should receive the support of all those interested in mining, whether members of the American Mining Congress or not.

DIRECTOR E. A. MONTGOMERY, LOS ANGELES, CALIF.

I believe through the publication of a monthly bulletin by the Mining Congress the policy you have outlined may be effectively carried out.



E. A. MONTGOMERY

To develop a more friendly spirit and mutual confidence between the employer and employee would result in material benefits to both, particularly so to the working class. Therefore, in my opinion, this can only be done by the general acceptance of open shop rule.

It has been my experience to successfully carry out this policy where labor organizations were quite determined to exercise the limit of their power. I believe in maintaining a high scale of wages and reserving for the employer the right at all times to increase the wages of any employee deserving such reward.

Such a policy advocated by the Mining Congress would be, in my opinion, generally approved of, and, if adopted by organized labor, would prove of great benefit to the intelligent wage-earner. The policy of the Mining Congress in other matters I quite approve of, and believe through the publication of a monthly bulletin, the good work of the Congress may be materially increased.

DECREASE IN OHIO COAL MINING

Twenty million tons is the Geological Survey's estimate by E. W. Parker, coal statistician, for the coal production of Ohio during 1914. On April 1 all the coal miners in Ohio went on strike over the wage scale, the matter in dispute being whether wages should be paid on a mine-run basis, as provided by recent legislation. The law has been bitterly opposed by the coal operators, and while during the first three months of the year the coal production of the state was ten per cent greater than the production for the corresponding months in 1913, practically all of the Ohio mines were idle from April to July. The Hocking Valley district then resumed operations, and in August the Cambridge district also resumed. In what is known as the No. 8 district (mines operating in the Pittsburgh No. 8 coal) the mines were still idle at the end of the year. The wisdom of the mine-run legislation may well be

questioned, particularly in states where the markets require screened coal, as is largely the case in Ohio. However that may be, the labor struggles combined with the other unsatisfactory conditions have caused a decrease in the output of Ohio mines in 1914, compared with 1913, of about forty per cent, a larger decrease than is reported by any other coal-mining state. The production for 1914 will not be much if any more than 20,000,000 tons, whereas in 1913 it amounted to 36,200,527 short tons.

CALIFORNIA MINES' BEST YEAR SINCE '64

California shows the largest output of gold in thirty-one years for the fiscal year ending June 30, 1914, according to the figures of the United States Geological Survey. All the metals, except zinc, show an increased yield, although the ore treated was less in quantity and fewer mines by 245 reported a production than in the preceding year. The value of the output of recoverable gold, silver, copper, lead and zinc was \$26,812,489, an increase of \$428,543 over the 1912-13 production. The total increase in gold production was \$693,480, of which \$502,966 came from the deep mines. The total recoverable value of gold from California mines was \$20,406,958, of which, \$11,570,781 or 56.7 per cent came from deep mines. The value of recoverable silver amounted to \$832,553.

The total production of quicksilver in California during 1914 was approximately 13,000 flasks, valued at \$700,000. California's output of borax exceeded \$1,000,000, natural gas over \$1,000,000, and silver, tungsten, salt, pyrites, clay and limestone, close to \$500,000 each. The production of copper for 1914 is estimated at 26,000,000 pounds, valued at possibly \$3,500,000.

ARIZONA'S CHAPTER

LIVE-WIRE ORGANIZATION EFFECTED AT PHOENIX—OFFICERS ELECTED—CAMPAIGN MAPPED OUT—WORK BEGUN

Enthusiasm is the keynote of the newly organized Arizona State Chapter of the American Mining Congress—enthusiasm and a red-hot zeal for real results. The Newest State has a chapter that promises to set the pace for all the other chapters of the United States.

The Arizona Chapter is the outcome of the seventeenth annual convention of the American Mining Congress, held at Phoenix the week of December 7, 1914. At this meeting it was brought forcibly to the attention of the delegates present that while Arizona was one of the most fortunate states, in so far as her mineral resources were concerned, she was lagging far behind in actual development, and this not only applied to her mineral resources, but also to all other natural resources with which she is so peculiarly blessed.

It was realized that to most effectively remedy these conditions it was necessary to have a strong organization whose principal efforts should be devoted to disseminating accurate information regarding the vast resources of the State, and creating such conditions as would invite the development of same. The result is shown in the organization of this Chapter.

At this meeting Mayor George U. Young, of Phoenix, was chosen temporary chairman and E. L. Wolcott, the assistant secretary of the American Mining Congress, was made temporary secretary.

The following officers were elected:

Governor—W. B. Twitchell, Phoenix; first lieutenant governor, Frank M. Murphy, Prescott; second lieutenant governor, C. A. Grimes, of Kingman; third lieutenant governor, W. B. Gohring; treasurer, H. J. McClung, Phoenix. Directors: J. P. Hodgson, Bisbee; Norman Carmichael, Clifton; A. J. Pickrell, Prescott; T. M. Riordan, Flagstaff; O. D. M. Gaddis, Kingman; Harry Clark, Winslow; L. S. Cates, Ray; B. B. Gottsberger, Miami; Lorenzo Hubbell, Gana-

do; Al Bernard, Tucson; Con. O'Keefe, Nogales; J. C. Goodwin, Tempe; A. S. Kimball, Thatcher; D. A. Burke, Bouse.

Governor Twitchell, on taking the chair, following an ovation which testified to the esteem in which he is held, said in part:

The pay day of the mines is the only real pay day we have here in Arizona. Without the mines this state would amount to little, for it is the mines that afford us a market for the products of our farms. And at a time when the farmer's money is going out of the state the miner's money is coming in. Here in Arizona we have devoted altogether too little attention to the mines. We have not realized their importance, and perhaps this is the fault of the mining men. This chapter of the American Mining Congress can be made a tremendous factor for good. It is going to gain for the mines the recognition they deserve and need.

The chapter will wield a big influence in this great mining state. It will stir up an interest in organized effort, not possible to be stirred up in any other way.

At the first regular business session of the directors, held December 21, the following committees were named:

Executive: L. S. Cates, H. J. McClung and A. J. Pickrell. Legislative: W. B. Gohring, A. T. Thompson, P. G. Becket, J. S. Douglas, W. L. Clark, C. A. Grimes, H. P. DeMund, Epes Randolph, G. H. Dowell, R. N. Fredericks and W. H. McBride. Finance: Walter Douglas, William Gohring and Norman Carmichael. Taxation: B. Britton Gottsberger, Norman Carmichael, G. H. Dowell, W. L. Clark and L. S. Cates.

The finance committee met on the following morning and outlined plans for increasing the membership. It is the hope of the committee to bring the membership of the chapter up to 2,000 during the present year and to have as members every man in Arizona interested in any way in mining. J. H. Robinson, of Prescott, has been chosen permanent secretary of the chapter, headquarters established in Phoenix, a force of clerks being already at work under the super-

vision of E. L. Wolcott, assistant secretary of the American Mining Congress. It is planned to organize locals or sections throughout the State. An annual convention of the chapter will be held in Phoenix on the first Monday in December each year.

The dues of the chapter are \$3 a year. Membership in the American Mining Congress is requisite to membership in the Arizona chapter. The annual dues of regular membership are \$10 a year and of associate membership \$2. Although associate members cannot vote for officers of the national organization, they will have the same standing in the state chapter as regular members.

Great care has been taken that the organization does not take the shape of a political machine, to be charged with scheming to obtain some advantage for the mining industry without proper regard being paid to all other industries including every form and kind of enterprise that goes to make up healthy prosperous conditions in our state. The chapter will have but one object in view—the upbuilding and development of the vast and unlimited resources of our state—and in this connection it will be one of the principal duties of the secretary to get before the board of directors statistical information as the same relates to each and every district in the state showing as accurately as possible, mineral, agricultural and commercial interests in the respective districts with suggestions and recommendations looking to their betterment, all of which will be supported by a painstaking, conscientious board of directors insuring results such as to reflect great credit upon all concerned and redound to the benefit of each and every citizen in our State. Following their broad lines the chapter will soon have in its possession such statistics and other data as will make it possible for the board of directors of the Arizona Chapter of the American Mining Congress to formulate lines of procedure cooperating with and assisting at all times the various elements in the different communities having a desire to work for the common good of all.

The Arizona Chapter of the American Mining Congress doubtless can and

should bring to bear, effective influence in every way legitimate, that will get the much desired results and bring to Arizona a degree of prosperity unparalleled. It is to be hoped that sincere co-operation from those who have a loyal interest in the welfare of our State can be relied upon. There is no one in the State more deeply concerned and who should more willingly give part of his time and cooperation to this beneficial undertaking than the wage earner. Healthy, substantial and permanent pay-rolls are what we must have if we want to prosper and we cannot have them at the present time without the assistance of outside capital, which we cannot hope to obtain if not treated fairly. If the citizens of Arizona, those interested in the welfare of the State, so desire, they can, through the Arizona Chapter of the American Mining Congress, create an organization through which most, if not all, of the disastrous, hurtful influences from which the state has suffered in the past, can be removed.

AN EMPIRE IN ITSELF

The area of California, 158,297 square miles, is approximately equal to the combined area of Roumania, Bulgaria, Serbia, Albania, Montenegro, Belgium, and Turkey in Europe.

The population of California, according to the latest census, was 2,377,000, as against 28,532,000 for the European countries named.

Of California's total area, it is of interest to note that seventy per cent has already been topographically mapped by the United States Geological Survey.

NEW MINE RESCUE STATION

Jellico, Tenn., is to have a mine rescue station. The Secretary of the Treasury has awarded the contract for its construction to W. H. Fissell & Co., of New York city, the accepted bid being \$63,181. The station is to be in the federal building in Jellico and a complete outfit for the rescue of entombed miners will be installed.

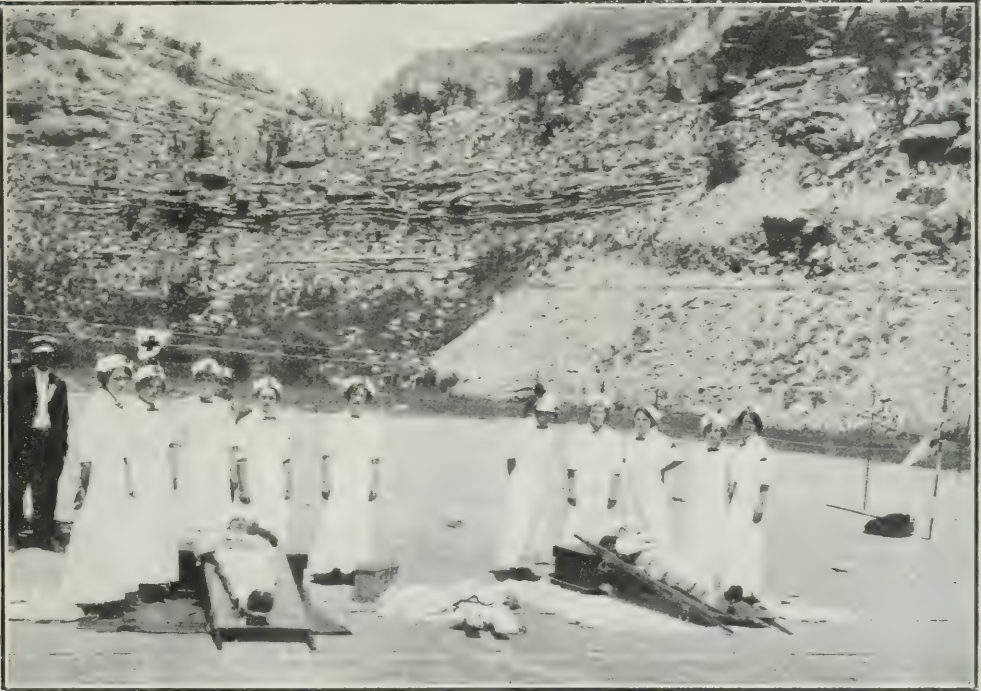
SAFETY FIRST

BEGINNING AND GROWTH OF THE MOVEMENT—ITS PURPOSE— ITS WIDE-SPREAD AND FAR-REACHING BENEFITS

The crack passenger train of one of our trans-continental lines was making its way over a section of territory which, but a few days before, had experienced heavy rains, resulting in numerous wash-outs. The train's progress was slow—it was consistently losing time with every mile. One of the passengers, voicing the general dissatisfaction, inquired the reason. "Because," replied the conductor,

mated or exaggerated. It is a matter that intimately concerns and affects the lives of all. The conservation of life and health is an investment that yields big dividends, not alone in its relation to human welfare but in a monetary way as well.

The noted mining engineer, Mr. John Hays Hammond, in an address at the Universal Peace Meeting, held in Wash-



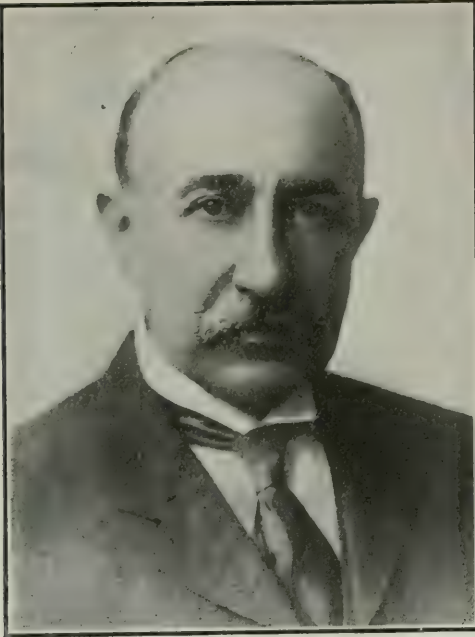
WOMEN'S FIRST AID TEAM AT WINTER QUARTERS MINE, UTAH COPPER CO.

"the company prefers that we get to our destination a few hours behind schedule, if necessary, rather than to take a chance on getting into eternity several years ahead of time." That conductor was expressing the safety-first idea as applied to railroading.

The conservation of human life and human energy is a subject the great importance of which cannot be over-esti-

ington, January 17, 1915, in deploring the waste of war, said:

Every year the great white scourge—tuberculosis—causes two hundred thousand deaths in the United States. Authorities compute the annual capitalized loss from invalidism and death due to tuberculosis at more than one billion dollars, through the devitalizing of American industry. And yet the same authorities affirm that an expenditure not to exceed fifty million dollars per annum—one-fifth of our military and naval



JOHN HAYS HAMMOND

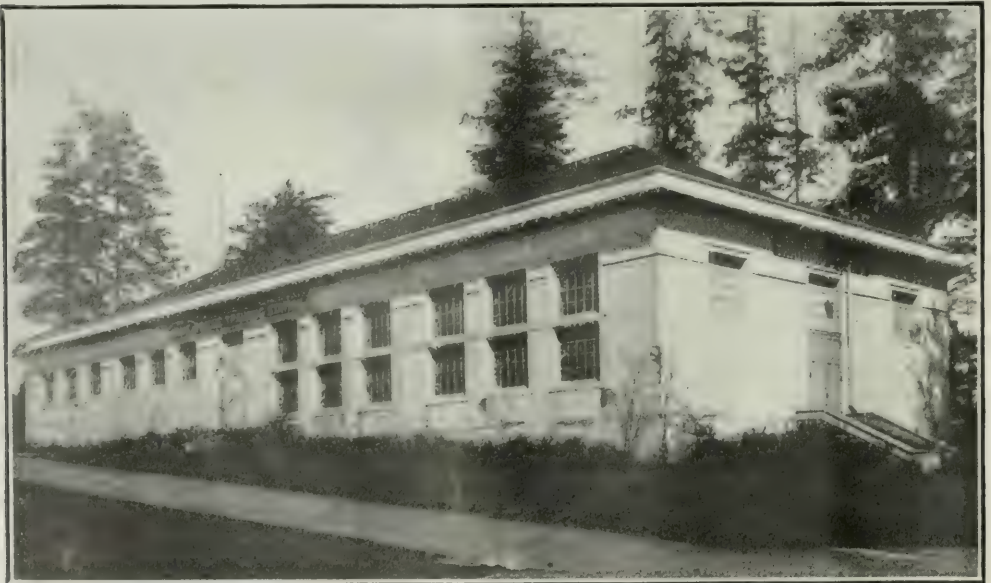
budget—would, in a few decades suffice to practically eradicate tuberculosis in the United States.

Has the nation more vital interests to safeguard than interests of this kind? Would it not be more intelligent to expend the

billions of dollars now applied to the destruction of our civilization, to the waging of war against disease, ignorance and intolerance—the inveterate enemies of humanity.

Mr. Hammond's remarks are indicative of the growing trend of thought, of the increasing sentiment in favor of the conservation of life, health and human well-being, a phase of which is so well expressed in the expression, "Safety first."

Few, if any, slogans are better known than that of Safety-First. Few, if any, stand for more or better. Few, through their use, through the inspiration they have created, have accomplished more, and none perhaps has been more far-reaching in its effects. Almost everyone is familiar with its terse phraseology and yet it is a safe proposition that most men and women do not realize to what extent the Safety-First movement closely concerns them. In a vague way they, perhaps, know it has a bearing on traveling by train or trolley, but beyond that the generality of persons have given little thought to a movement that, beginning in a small way, has grown to such proportions that it is a factor affecting the lives of every man, woman and child in the country.



U. S. BUREAU OF MINES RESCUE STATION AT SEATTLE, WASHINGTON



ILLINOIS MINE SAFETY STATION

The origin of the Safety-First idea and the slogan is in doubt. It is practically admitted, however, that the expression, or some form of it, had early use in the mining industry, the matter of greater safety and accident prevention being recognized at several mines and metallurgical plants a considerable number of years ago. Some little attention was being given in isolated cases to first-aid work, which had first been introduced into the Army and Navy, and later extended to the Forestry Service and Reclamation Service, and later still to cover the employes constructing the Panama Canal. The National Red Cross Society, of course, had had for years its first-aid service.

The spread of the Safety-First idea through the mining fields was undoubtedly hastened and materially aided and advanced through the creation of the Bureau of Mines, that branch of the Government service at once taking up and pushing it. The investigation of mine accidents by the Bureau of Mines can, perhaps, be said to have been the real beginning of the widespread movement.

The work of the Bureau of Mines along Safety-First lines began with instructing miners in safety methods, the use of mine rescue apparatus and first-aid treatment. This was in 1908. At that time there were only two localities

in the United State where first-aid was being taught coal miners—in the anthracite field of Pennsylvania and that of Birmingham, Alabama. The only sets of breathing apparatus in use anywhere were those owned by the Anaconda Company, of Butte, Montana.

Today in practically every State wherein are found mines the matter of greater safety receives attention. Eight



Left to right.—J. W. Paul, engineer in charge of rescue work, Bureau of Mines. Geo. S. Rice, Chief Mining Engineer, Bureau of Mines. J. Taffanel, in charge of French Explosives Station. L. M. Jones, engineer in charge of Experimental Mines, Bureau of Mines, Bruceton, Pa., near Pittsburgh, taken at Experimental Mine.

States have already taken legislative action in the Safety-First movement in mines—these States being Illinois, Ohio,



A TRAPPER BOY

Oklahoma, Nevada, Colorado, Tennessee, Kentucky and New Mexico. Other States are rapidly falling in line. In many ways the propaganda is being forwarded and gaining momentum. The Bureau of Mines is issuing, from time to time, seasonable and instructive bulletins and circulars on the subject, adding to its already extensive and valuable collection of Safety-First literature. Tests are made at experimental mine stations. In several states rescue stations are being erected, adding to the number already in operation. Lectures are given, classes are formed and courses conducted at many mining centers. In numerous of the schools in the mining districts, the Safety-First idea receives, at least, occasional notice, while in many institutes, and not a few of the universities, instruction as to accident prevention and first-aid work is included.

A large number of mining concerns have effected organizations looking to greater safety and the minimizing of accidents, among them being inspection bureaus, safety-first committees and in-

stitutes. Mine rescue and first-aid are the basis, or nucleus, upon which or around which each organization is built.

One of the notable results of the Safety-First idea has been the development of the humanitarian spirit in the field of business. It has led in many cases to a fuller consideration of the moral and mental, as well as the physical, welfare of the employes and their families.

In the coal fields of Pennsylvania more than 10,000 men have received instruction or have been trained in first-aid and rescue team work. In the anthracite region there were, at last report, 454 first-aid teams, comprising 2,556 men, and the number reported as instructed in relief work, up to the present time, 5,229. The number of rescue corps was given as 97, comprising 896 men, with 2,521 who have received instruction. In the bituminous region there are 362 first-aid teams, with 1,779 men and 2,156 instructed and 52 rescue corps, made up of 282 men and 594 instructed.

The Copper Queen Consolidated Mining Company of Arizona reports for its



RESCUERS WITH APPARATUS

first year under Safety-First rules a reduction in fatalities of about fifty-five per cent as compared with the previous year and the serious accidents reduced by about forty per cent. This, in mines averaging about 190 accidents per month, or seven and one-half for each working day, under Safety-First ideas testifies to the practical value of Safety-First methods.

The record of a large company in western Pennsylvania for a period of nine years shows a reduction in non-fatal

Oregon, 3; Maryland, New Jersey and Texas, 1 each.

Field meets in connection with Safety-First work in mines during the calendar year of 1914 were held in eighteen States, forty-three meets in all. The number of mines represented were 441, and teams participating 533, a total, including patients, of 3,139. Cash prizes, cups, medals, buttons, pennants and special prizes were competed for. Among those cooperating to bring about greater safety are local mining and state insti-



A CONSTANT REMINDER OF SAFETY FIRST

Picture taken at a point two miles in from main portal of Kellogg Tunnel—Bunker Hill and Sullivan Mine, Idaho

injuries of approximately one-half, and of fatal injuries, forty per cent.

In the number of men trained for mine rescue and first-aid, as reported to June 30, 1914, Pennsylvania leads with 1,519 certificates issued; Colorado, 556; Kentucky, 518; Arizona, 422; Montana, 415; Washington, 401; Michigan, 358; Wyoming, 332; Minnesota, 315; West Virginia, 294; Indiana, 270; Missouri, 237; Iowa, 195; Tennessee, 182; Oklahoma, 171; New Mexico, 156; Arkansas, 149; Alabama, 141; Kansas, 131; Virginia, 117; Nevada, 115; Idaho, 107; Illinois, 84; Utah, 77; South Dakota, 63; California, 45; Wisconsin, 33; Ohio, 29;

tutes, miners, mine operators and mine officials, miners' unions, operators' associations, the Y. M. C. A., the Red Cross, local safety committees, mining schools, American mine safety associations, state mine inspectors, technical and trade journals and the press.

Railroads and street car companies have not been slow in taking up the movement. As showing the value of it as applied to travel, the Pennsylvania system during the last half of the fiscal year ended July 1, 1914, carried 87,000,000 passengers, and not one of its passengers was killed in a train accident. In the calendar year, 1913, the

Pennsylvania lines east of Pittsburgh carried 108,000,000 passengers, more than the entire population of the United States, and its over seas possessions, and not one person was killed in a train accident.

The New York Central, in the three and one-half years ended July 1, 1914, operating 1,266,654 passenger trains, and 819,513 freight trains, and carrying 136,154,983 passengers, recorded not a single passenger killed in a train accident.

A very prominent coal operator of the Pennsylvania anthracite field is quoted as saying that for every dollar spent by his company on care because of accidents, \$100 is now being spent to prevent them. His company has among its employees 10,000 trained men in first-aid to the injured work, a first-aid corps, equipped with medical supplies, in every colliery, hospitals larger than those required by law and is spending hundreds of thousands of dollars for the one purpose of saving human life.

The phase of the Safety-First idea as applied to mining that does not generally occur to the average citizen not directly interested in the ownership or operation of a mine, is that of how it directly affects him. The average individual rejoices in the humanitarianism. He is glad to see the conservation of life and the curtailment of suffering and want, which Safety-First means, but that it concerns him in an economic way, a monetary way, very seldom occurs to him. Perhaps in some slight degree he may glimpse the fact that the great toll of life taken and time lost may be figured in his coal bill, but more likely it will not have occurred to him. Provided, however, he has, that is likely to be so far as his connecting up of the matter goes. Possibly, too, he does not buy coal—if so, that lets him out. But does it? It most certainly does not. Far from it. The Nation's fuel and ore bill taxes every man and woman in the Union. It is figured in the cost of every article of use; the clothes we wear, the houses we live in, the food we eat, all pay tribute to coal and metals. The manufacturing of the cloth in our garments has called for heat and metal. The tools of the tailor in the

fashioning, likewise. The shop wherein the clothing was made and the store in which it was sold needed heat in winter. The tools of the carpenter and the implements of the farmer and gardener have equally needed the fire of furnace and forge and the minerals of the earth. The light that illuminates our houses and the power that drives our cars can be traced back to coal from the mines.

Now in this mine cost, which enters so into the price of all else, it is easily conceivable that the losses by disasters, the cost of human life, the expenses and the loss of time attendant on injury, the compensation to the living for hurts to themselves or the loss by death of their bread winners, must all be reckoned in the price received for each and every ton of mineral production. All goes to make the price higher. Every disaster averted, every life spared, every injury avoided is a factor for lower cost of production—a conservation of cost as well as of life.

Elsewhere in this journal, under the heading, "Metallurgical Research and Mine Safety Stations," some startling facts as to human life's toll in mines are given. It is a presentation of its case that should have a wide reading.

It takes little argument to demonstrate that alleviation of these conditions, conditions where thousands of lives are annually lost, would not only be humanitarianism in its highest and noblest form, but decidedly good business.

The MINING CONGRESS JOURNAL stands for the Safety-First idea. Whatever influence it may have, is, and will continue to be, thrown unqualifiedly and unreservedly at all times on the side of the conservation of human life and of human energy. It is a privilege and an opportunity as well as a responsibility to advocate and forward the gospel of Safety-First—a privilege and an opportunity of which the THE JOURNAL gladly avails itself.

THE ROAD TO ATTAINMENT

The way out and the way upward is in learning. The truth embodied in this thought is recognized and acted upon by many miners in Pennsylvania, where

the "boys," not a few of them veterans in the field of mining service and some of them gray bearded and gray headed, are taking advantage of the opportunities afforded them in the night schools. There are 482 students enrolled in the Nanticoke night schools, which are the outgrowth of the Nanticoke District Mining Institute, which has a membership of over 900 mine workers.

There are many schools in the anthracite region. At Shamokin, in the Shamokin-Mt. Carmel district there is a large institute made up of employes of the Susquehanna Coal Company and the Philadelphia & Reading Coal & Iron Company. Similar schools are conducted in four school districts. There are schools at Plymouth and Shickshinny and institutes at Williams Valley and Lykens.

Besides the schools under the control of the local school boards and helped by the state, there are a number conducted by the operators without state aid.

In the various schools, elementary and advanced mining are taught, also mechanical drawing, machine work, electrical work, commercial courses, shorthand and typewriting, reading and arithmetic. Sewing, millinery and household economy are taught the girls and women. The Nanticoke district has recently added to its staff a woman field secretary.

WASHINGTON MINE STUDY COURSES

The Tacoma (Wash.) *Ledger* says that the activities of the University of Washington and the State College of Washington are so alike in so many particulars that one is almost forced to the conclusion that the duplication of the courses is deliberate, rather than accidental. It declares that the duplication even extends to the short winter courses. These courses include assaying, mine surveying, chemistry, mineralogy, geol-

ogy, mining and metallurgy, instruction in which is given in the winter school of mines in the State College of Washington, which runs for twelve weeks, beginning the first Wednesday in January. The course is designed to meet the needs of the prospector and mining man who cannot afford the time required for the regular two or four year courses. The University of Washington offers practically the same subject and in addition coal mining and rescue work, the last named instruction to be given in the United States mine rescue station situated on the campus.

ALBERTA AIDS MINERS

Alberta, Canada, is extending its educational service so as to aid the coal miners of various parts of the province. Schools have been established at mines and are operated whenever possible in connection with local school boards, the Government paying 50 per cent of the cost and the respective municipalities the remaining one half.

The schools are receiving the cordial support of the mine managers. Those in attendance represent many nationalities. All are showing eagerness to improve their technical knowledge and to qualify themselves for promotion. The work of the teachers provided by the Government is supplemented by the engineers connected with the mines, the engineers volunteering their services free. The technical schools in the cities are also well attended especially the evening classes.

Hon. J. R. Boyle, Minister of Education in the Alberta Cabinet, is authority for the statement with the coal production of Alberta is now 5,000,000 tons annually and is increasing each year. There are a variety of coals suitable for domestic and factory uses. An excellent quality of semi-bituminous coal is sold in Edmonton, at \$2.65 per ton.

THE COAL SITUATION IN INDIANA AND ILLINOIS

STATEMENT PREPARED BY THE OPERATORS' ASSOCIATIONS FOR PRESENTATION TO PRESIDENT WILSON

The coal operators of the states of Indiana and Illinois present to the American nation some facts about the condition of their business. The normal state of this industry for some years has been such as to endanger the lives of the miners, waste the coal reserve which now insures the safety of the Eastern part of the country and deprive these operators of any hope of profit. The recent general business depression has caused an intense exaggeration of this dangerous condition. The near future contains nothing but disaster unless some relief is extended. What follows summarizes the facts.

This coal sells in a market embracing eighteen states. The business is therefore interstate. For that reason, these operators are amenable to the anti-trust laws which, they believe, forbid any co-operation among them. Because they cannot cooperate, they cannot simplify their selling methods or reduce their selling and operating costs.

Their mines are within these two states and cannot be removed therefrom. The states, therefore, regulate their operating methods.

The effect of the nation's anti-trust laws is to cause them to compete without restraint. This unrestrained competition has yielded a decreasing selling price. The states' laws, which were enacted to assure the safety and the social welfare of the miners, have resulted in a rising production cost. The effects of these two sets of laws have moved in opposite directions. The rising cost of production and the falling selling price have long since made profit impossible and now threaten the safety of the whole business structure as well as of the miners and the public.

One of the refinements of competition in which these operators have indulged, has been the erection of elabo-

rate plants with which to prepare and clean carefully nine standard sizes of coal. In obedience to the states' laws, they have fireproofed their mines and have added expensive safety appliances. These things have enlarged the requisite investment in plant and equipment by 1,000 per cent in the last twenty years.

Another effect of enforced competition has been intense individualism. In consequence, they have opened three mines where only two were needed; they have employed three men where only two were necessary. These mines and men can find productive work only during 175 instead of a possible 300 days in a year.

Because they can give to their miners work but part of the time, these operators must pay higher daily wages than are warranted by the current selling prices. Their labor cost is 92.44 cents per ton, whereas the selling price is but \$1.14 and \$1.11 respectively for Illinois and Indiana.

From the resulting narrow margin, these operators must pay: Administrative salaries and expenses; selling cost; royalty or land depletion charge; depreciation on plant and equipment; the cost of all materials used in the mines and some eight or ten other major items of expense. The margin is, clearly, wiped out by these items of expense, leaving the business with no possible net revenue. Still, these operators are morally or legally obligated to pay the cost of any great or dire emergencies; to educate their miners in ways of assuring greater safety; to educate the users in methods by which coal can be burned with greater efficiency; to expand their sales into the foreign markets; to experiment with and undertake the manufacture of by-products and to do those hundreds of little things which make for

greater safety and for true conservation.

One obligation resting upon these operators is to recover the pillar and top coal that the country's loss may be lessened. Because this involves an additional expense, it cannot be undertaken. Still, for every two acres of coal land which they exhaust, they leave one acre of coal unrecovered and unrecoverable in the ground. This means that in Illinois, each year, there is exhausted 12,000 acres of coal land whereas the exhaustion should be but 8,000 acres. In Indiana, there is exhausted each year, 3,000 acres whereas there should be exhausted but 2,000 acres. In the nation there is exhausted each year 100,000 acres whereas the exhaustion should be but 65,000 or 70,000 acres. It is significant, here, that these are two of the five states which produce more than 80 per cent of the coal consumed in America. This means to say that this alarming waste is taking place next door to the centers of greatest density of population. It is endangering the near future of the very heart of this nation.

These operators, caught between the conflicting regulations of the states and the nation, yet under compulsion to obey both, are powerless to prevent this waste. Only the nation can reverse this tendency and provide against it. This statement is made in the hope that some suggestion will be made which will bring the relief needed.

A STATEMENT OF FACT

It has been said that the normal condition of the coal mining industry is one of dangerous financial exhaustion. Since the end of the depression in 1897, the farms and factories have enjoyed increasing prosperity. This has not been shared, at any time or in any degree, by the coal industry. Regardless of the regular and substantial annual increase in tonnage produced, the returns from investments in the coal trade have been steadily diminishing. Coal has supplied the power which made every business rich, yet the author of all this wealth remains poor.

In the last dozen years, in fact, there have been but a few brief periods in

which the coal trade has enjoyed any prosperity. These prevailed in each instance for not to exceed two or three months. They were due to wholly unnatural causes, and in no manner indicated that the business had, at last, become master in its own house. For example, these operators got remunerative prices during the anthracite strike of 1902, when they profited by the misfortunes of others. For very short periods of car shortage in the winters of 1903 and 1904, this experience was duplicated. One or twice since that time, strikes or other temporary labor difficulties in one state gave the other states business, to which they had no natural right. Except in such times, the trade has been unprofitable or actually showed a loss.

Meanwhile there has been a steady increase in operating and administrative expense due:

1. To repeated advances in labor cost.
2. To the increased cost of material, such as rails, timber and cement, and machinery.
3. To the passage of laws in behalf of the workers such as the safety measures and the Workmen's Compensation Act in Illinois.
4. To the increased cost of making sales, arising from unrestricted competition.

THE COST OF PRODUCTION

According to the figures compiled by the Bureau of the Census, the amount paid in wages was, in 1909, above 80 per cent of the total selling value of coal at the mine mouth. Since 1909 there have been granted two wage increases—one in 1910 (5.55 per cent) and another in 1912 (5.26 per cent). These increases have brought the wage cost per ton of coal produced to 92.44 cents in 1913.

In 1913, the average selling price of coal at the mines in Illinois was \$1.14 and in Indiana \$1.11 per ton. This leaves only 21.6 cents in Illinois and 18.6 cents in Indiana available, out of which must be paid:

The cost of material used at the mines;

The cost of making sales;

All officers' salaries;
 General expenses;
 Insurance (liability, fire, storm, etc.);
 Taxes (including tax on plant and mineral rights);
 Interest on the investment;
 Depreciation of plant;
 Royalties or charges for the exhaustion of coal.

The last report of the Bureau of Census (1909) showed that without allow-

so good a year as 1913 an actual profit return was impossible, but to the contrary and as existing facts show developed a substantial deficit for the industry in these two states.

A considerable addition to the cost of production is made by the idle time of the mines, during which all overhead and some labor costs must be paid. The average number of productive days worked per annum in these two states is

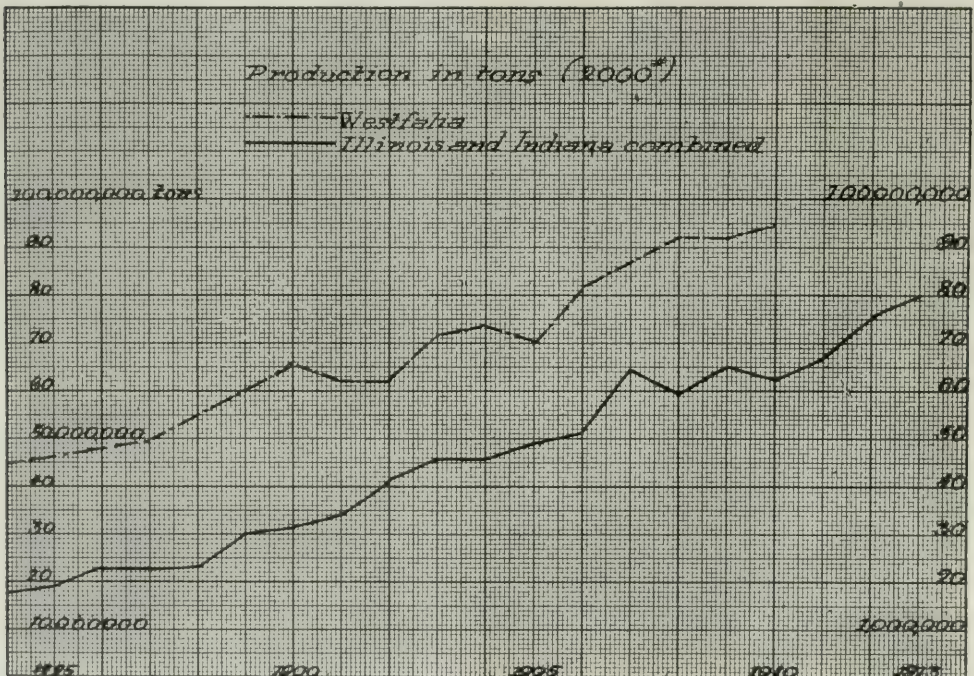


FIGURE 1.

The top line shows the production of the Westfalia syndicate from 1894 to 1912. The bottom line shows that of Illinois and Indiana combined. The rate of increase is almost identical.

ing for any interest charge on the investment or for amortization of property, the so-called net returns in Illinois and Indiana were only three cents per ton in Illinois and less than one cent per ton in Indiana.

The average royalty paid, however, in these two states on coal recovered under lease is five cents per ton and the average present valuation of coal land is such as to require a very minimum amortization charge of three cents per ton to recover such land value within the period of the mine's life.

It will, therefore, be seen that in even

only about 175 out of a possible 300 or more. This idle time of the miners is not confined to one season or period during which they can find employment elsewhere. To the contrary, the men are always subject to call, for which reason they urge greater daily wage that their annual income may be sufficient for their needs. This causes these operators to grant abnormal wage advances, which are directly reflected in coal cost.

Many industrial plants which produce standard or basic commodities find it possible to operate twenty-four hours per day by using different shifts of men.

They work thus for 310 or more days a year or a total of 7,440 hours per year.

Still other industries, on two eight or ten hour shifts, per twenty-four hours—300 to 310 days per year—operate 5,000 to 6,000 hours per annum.

Even one eight hour shift in each twenty-four hour period—310 days per year—gives 2,480 working hours per annum. These mine operators, because under unrestricted competition they built more plants than are needed, can only operate for eight hours out of every twenty-four, and for 175 days per year, or 1,400 hours.

It will be seen, therefore, that as against 100 per cent plant utilization (twenty-four hours, 310 days—7,440 hours per annum) possible to some industries and as against an average by all industries of 33 per cent to 45 per cent (one eight or ten shift per twenty-four hour period—310 days), a coal plant is in actual productive use only about 18 per cent of the time. This makes plant, interest and depreciation charges six times heavier than for other industries.

In addition to ruining the operators, this distresses the miners. For example, the 97,000 miners of Illinois and Indiana who are prevented from working 125 days per year might, at the present wage, have earned an additional \$36,400,000 or \$371 per man per year, had their employers been able to give them work or had their efforts been expended in other directions.

The present markets for Illinois and Indiana coal can be supplied by 60 per cent of the mines now being operated. The interest on the surplus capital invested in these unnecessary mines adds to the cost of production in each.

(For concurring opinion of labor on these points these operators refer to the appendix which contains certain testimony given at a hearing in Chicago the latter part of July, 1914, before the United States Commission on Industrial Relations, by Duncan McDonald, secretary-treasurer of the United Mine Workers in Illinois.)

THE CONSEQUENCES OF THIS WASTE

Having shown the cost of mining coal and having measured it alongside the revenue from the sale, it remains to measure the consequences.

In Bulletin 47 of the United States Bureau of Mines, Dr. J. A. Holmes, Director of the Bureau, states:

"During the past year (1911) in producing 500,000,000 tons of coal we wasted or left underground in such condition that it will probably not be recovered in the future, 250,000,000 tons of coal. In a higher way, our mineral resources should be regarded as property to be held in trust with regard to both the present and future needs of the country. Neither human labor nor human agency has contributed to their intrinsic value and whatever rights the individual may possess have been derived from the general government. The government does not surrender its right, and should not neglect its duty to safeguard the welfare of its future citizens by preventing the waste of these resources."

It is customary to say that the mining of coal is an extractive industry. The phraseology is too weak; it must be considered as a destructive industry. That is to say, each ton of coal removed destroys by just that much the value of the plant engaged in producing it. Also, it destroys by that much the country's coal reserve. Coal once mined or lost can never be replaced. With the life cycle of several large coal deposits well defined and with the end not extremely remote, the deliberate waste of coal by mining methods now in use constitutes an immediate menace. However, when these operators have no margin above cost under the best market conditions and when working only the choicest areas, the removal of thinner or inferior parts at a much higher cost per ton is out of question. This will be explained briefly.

The major portion of the thick-seam coal in Illinois and Indiana is recovered by the so-called room and pillar plan, the work advancing toward the boundaries of the controlled area from the shaft bottom. By such method pillars of coal, of sufficient size to sustain the overlying weight, are left standing twen-

UNITED STATES CENSUS 1909

1909	Num-ber of Oper-ators	Capital	EXPENSES						Number of Wage Earners	Coal Produced, including Coal Coked at Mines	
			Total	Salaries	Wages	Supplies	Royalties	Miscellaneous Expenses		Value incl. Minor Products	Tons (2,000 lbs.)
	470	\$75,257,667 per ton 1.488	\$51,697,504 1,024	\$2,083,668 .041	\$41,991,246 .832	\$4,944,371 .0977	\$744,860 .014	\$1,933,359 .038	74,445	\$53,030,545 1.05	50,570,503
	223	35,937,961 per ton 2.441	14,906,831 1,012	604,111 .041	12,273,544 .834	1,198,974 .0815	240,494 .0163	589,708 .040	22,357	15,018,123 1.02	14,723,231
1909 and 1889	Cen-sus	Capital	EXPENSES						Wage Ratio to Value		
			Total	Wages	Supplies	Contract Work	Value at Mines	Tons (2,000 lbs.)			
	1909	\$75,257,667 per ton 1.488	\$51,697,504 1,024	\$41,991,246 .832	\$4,944,371 .0977	\$51,480 .0001	\$52,999,918 1.048	50,570,503	79%		
	1889	17,630,351 per ton 1.457	10,366,069 .856	8,111,253 .670	966,927 .0799	26,662 .002	11,755,203 .097	12,104,272	69%		
	1909	35,937,961 per ton 2.441	14,906,831 1,012	12,273,544 .834	1,198,974 .0815	10,674 .0007	14,984,616 1.018	14,723,231	81%		
	1889	3,435,703 per ton 1.207	2,581,669 .906	2,045,641 .718	241,094 .0847	5,807 .0002	2,887,852 1.015	2,845,057	70%		

WAGE INCREASES

1910—5.55%
 1912—5.26% bring wages to 92.44c. per ton for Illinois and Indiana, 1913.
 1913—Revenue per ton Illinois—\$1.14.
 1913—Revenue per ton Indiana—\$1.11.
 Leaving 21.6c. in Illinois, and 18.6c. in Indiana per ton out of which must be paid Salaries, Material, Insurance, Losses, Sales Expenses, General Expenses, Interest, Depreciation and Exhaustion of Coal and Profit.

ty-five to forty feet apart. Also all coal above certain well defined lines of parting in the seam are left up to protect a roof until the boundaries of the acreage have been reached.

These pillars and the so-called top coal are supposed to be recovered as the work is carried back to the bottom of the shaft. In actual practice, however, this is seldom or never done. Thus the actual coal recovery from any given acreage seldom exceeds 50 per cent of the total amount in the seam out of a possible 90-95 per cent available by proper mining practice. This is true for this reason. As the distance from the shaft increases, the expense of haulage and road maintenance increases. Also the hazard from gas and loss from mine falls increase. Likewise, in working backward to the shaft the quality of the coal secured is impaired by reason of contamination with accumulated refuse of earlier work. Therefore, all these valuable areas are simply abandoned, because the operator cannot afford to pay the extra cost of reclaiming this coal.

It also occurs at various places that substantial bodies of coal lie between the boundary lines of two approximately adjoining mines. The extra haulage cost to either shaft, for the removal of this intermediate coal (although only a few cents), cannot be borne without operating loss. Such areas are therefore entirely neglected and cannot later be recovered because the amount of coal available would not justify the development of a new mine to reach them.

Although not strictly germane to the subject in hand, mineral land taxation arises as an indirect causative factor of waste. Many operating companies hesitate to secure as large areas as might be economically available to their shafts because they wish to avoid tax payment through a long period of years on a valuation of coal rights which is unwarranted. They prefer to let title to such additional acreage rest with the farmer or other owner who uses only the surface and who, while so using it, does not pay any tax on the underlying coal. Later, it frequently occurs that such original owner, with an unreasonable notion of the value of his coal rights, makes pur-

chase impossible through demand for excessive price. This coal also is abandoned along with the adjoining worked-out area.

This waste of coal should concern the Eastern and Central states sufficiently to cause some relief to be extended to these operators. It is to the country's interest to see that these operators get enough money to make this recovery reasonably complete.

SOCIAL CONSEQUENCES OF LOSS

Aside from the economic waste mentioned herein, the loss of revenue has serious social consequences.

The continuous and prolonged lack of any profit in the coal industry makes it impossible for these operators to furnish, in all instances, the necessary safeguards to make mining even a relatively safe occupation.

It has also occasioned the rejection by many of the provisions of the Illinois Workmen's Compensation Act. That is to say, coal companies without current net earnings or any sort of reserve resources are not willing to assume such additional definite obligations as the law proposes; to make provision for the injured workman and his family or even to obligate themselves to make incidental payments of any kind. Necessity compels them to rest their hope on the throw of chance in a judicial hearing. They rely on a court's decree to leave them something of their capital, whereas if they worked under this law they might as well have no capital for all the return they can hope to get upon it.

For this reason, the anticipated value and beneficent purposes of such legislation is clearly nullified. And until, by common consent, the conditions detailed in this statement of fact have been ameliorated, further effort taking the form of additional legislation, however worthy, rational or desirable, will prove similarly abortive and futile.

COAL AND REGULATION OF BUSINESS

For a part of the present disastrous condition of their industry the coal operators are, perhaps, themselves responsible. They have not organized their business as many other industries have

done. However, with the very stringent anti-trust laws of the states and the Sherman Act confronting them, much uncertainty has existed and still exists as to what the various laws permit. Because of this uncertainty no concerted action has been taken. During the period of waiting for some new light on the laws, many operators have hoped that some solution would come and that they might survive until the dawn while competitors would fail.

The recent passage of certain acts, which may with propriety be called enabling laws, encourages these operators to believe that public sentiment has so changed that a possible opportunity to secure relief presents itself. They, therefore, submit this statement.

Their hope is that the Trades Commission may be the governmental means through which the nation will ultimately be thoroughly enlightened regarding the absolute equities of their industry. They

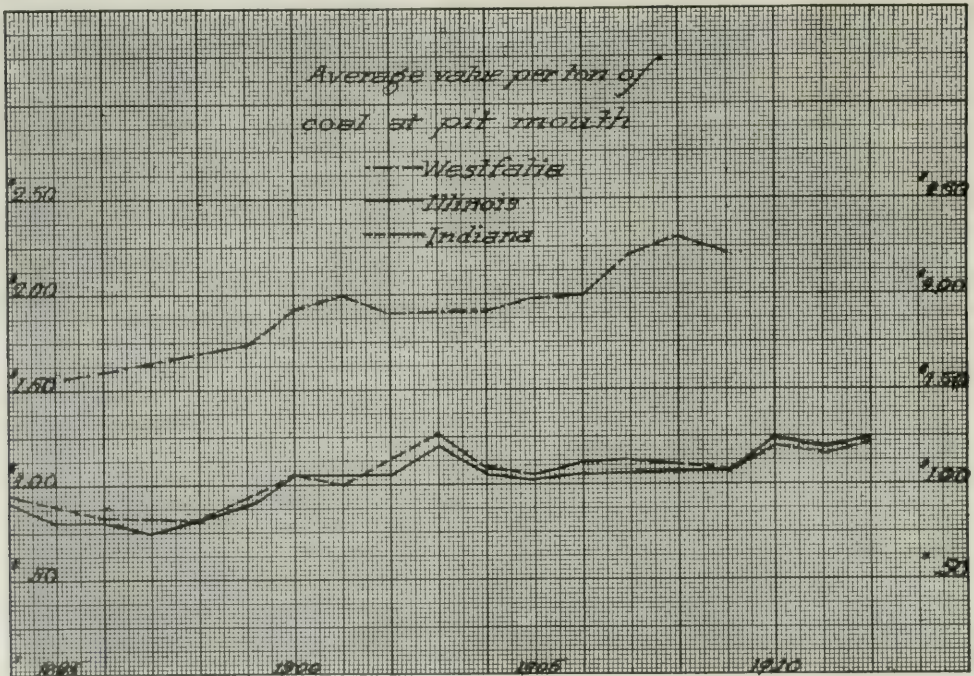


FIGURE 2.

This shows the average selling price of coal at the pit mouth from 1894 to 1912. The Westfalia increase was 75 cents a ton; that in Indiana and Illinois was 30 cents a ton.

They have been discouraged by the severity of judicial rebuke, which has, throughout the last several years, followed many community efforts in other industries. These operators have, therefore, done nothing, but are now prepared to defend their claim to just consideration and a fair return. They do this not alone for selfish reasons but because they want to make appropriate provisions for conserving natural resources, and to grant their workers physical and social comforts beyond those now possible.

further believe that, on account of its extent and importance, they are warranted in urging as a first consideration that one of the members of this Trades Commission shall be a capable, experienced man, who is familiar with mining conditions and requirements, is acceptable to the coal industry and who can bring to the Commission sound judgment on all matters affecting these interests.

They also hope that through the agency of this Commission, or upon the sanctioned initiative of the operators

themselves, the apparently necessary remedy for present conditions may be immediately applied, such remedial plan to be subject to a later determination by the Federal Government, working through an appropriate agency, as to its propriety.

There is no desire now or hereafter to establish a coal monopoly. Much less is there a desire among these operators to extort unreasonable profits. But they consider it vitally essential to stapleize the industry for the benefit alike of the workmen, the consumers and investors. It is, they believe, reasonable to assume that as long as the Government sustains and encourages the principle of collective action—as evidenced by the exemption of labor unions from anti-trust measures—it would also sanction a plan enabling coal operators to cooperate in a similarly legitimate way, particularly if appropriate and definite governmental control were included to the extent, at least, of permitting all of such activities to be known to the public and provided that sufficient and ample penalties be provided and imposed for the violation of all such rules, agreements or laws as may be devised to regulate such collective actions.

Coal operators would not object to, but, on the contrary, would invite such publicity and supervision.

This suggestion is particularly pertinent for this reason. On every hand these coal operators are confronted by combined purchasing agencies to which they sell their coal and by combined workmen from whom they buy their labor. Thus situated, these operators are obviously at a disadvantage when, disorganized as herein stated, both their buying and their selling are done with collective or cooperating units.

Other industries enjoy a degree of encouragement and protection by the Government which is denied the coal mining industry. In volume of business, mining is approximately one-half that of agriculture; these major industries are alike in that both work the land in recovering vital necessities for the public use, yet, regardless of the fact that the exhaustion of the mineral deposits is irremediable, while the loss of soil fertility and

productiveness can be overcome, the United States spends only one-twenty-fourth as much to promote the mining industry as to help agriculture. Intimately affecting, as it does, the lives and welfare of all our citizens, the coal industry deserves and should receive at the hands of our law makers, attention proportionate to its importance.

The publications of the United States Geological Survey and the Bureau of Mines, while helpful in the physical operation of properties, do not contain statistics such as are furnished by the Agricultural Department dealing with costs, values and distribution. The appropriations are entirely too small.

When the Southern cotton growers suddenly found their market demoralized by the European war, prompt investigations were made and assistance rendered. Whatever the major sentiment or opinion may be with reference to the propriety and warrant of such help so extended, the fact remains that however bad and unfortunate this situation may be, it is still not so serious (except perhaps as to the number of persons immediately involved) as the present coal producing situation. Nor is it as threatening to the general welfare. For, even though all the present cotton crop be lost and return no value whatever, the land remains and later crops are possible. With coal removal or waste, the land is exhausted of such value permanently, and the serviceability and use of a coal mining plant is not, as with the land, perennial.

Cooperation would not only greatly benefit the workmen and investors in the coal business, but would encourage the establishment of other industries now sorely needed in this country.

For example, the necessity for the establishment of by-products and coking plants is very evident. The utilization of sulphate of ammonia for fertilizer, creosote oil for timber treatment, the products of coal tar for industrial and pharmaceutical purposes is too well known to require further reference. Over \$12,000,000 were paid last year for coal tar products imported from abroad. Of the 95,000,000 gallons of creosote oil consumed in the treatment of ties and timber, 60,000,000 gallons were import-

ed. Of the 44,000,000 tons of coke manufactured in the United States in 1912, 33,000,000 tons were made in beehive ovens and the waste in smoke was over \$50,000,000.

It is only through cooperation that the coal operators can get together the money needed to establish the coking and by-product industry on a proper basis in this country. That is to say, the coal man is the proper producer of these by-products but he cannot do so because he has

our resources but have ruthlessly destroyed the heritage belonging to ourselves and our children. If we are to keep our place in the commercial world we must learn the lesson of economy and we need offer no apology if we propose to learn this lesson in part from those old world nations which have been forced by stern necessity to conserve every resource in order to support their dense populations. One notable example is the Westfalia Syndicate of Germany and it

Table "4"

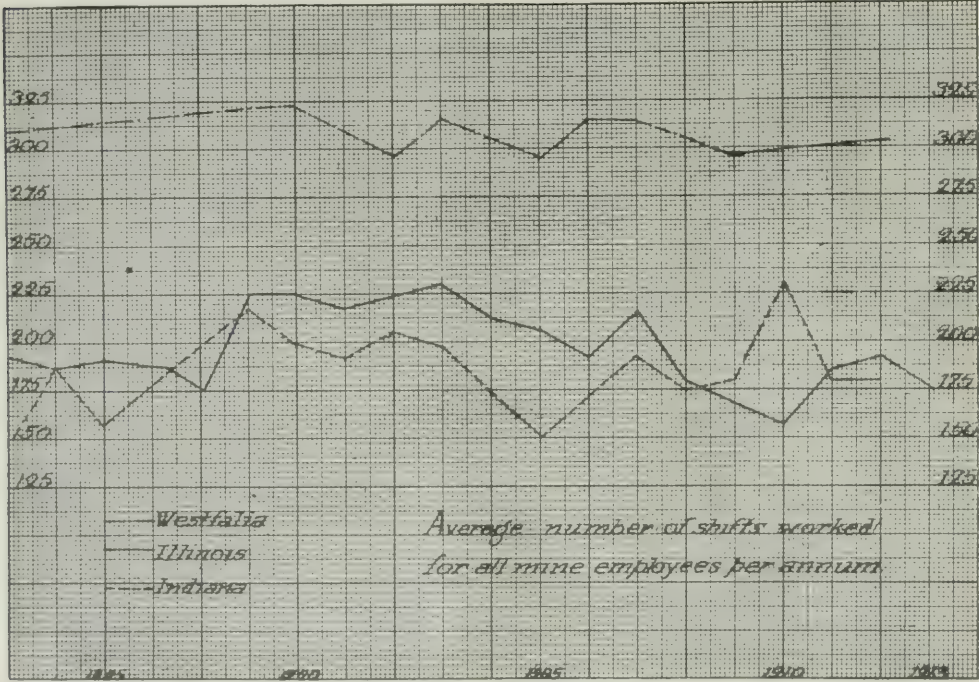


FIGURE 4.

This shows the number of shifts worked by Westfalia and Illinois and Indiana from 1894 to 1912. Westfalia made an average of about 300 days a year. Illinois and Indiana made less than 200 days.

not the capital and cannot get it because his business is so disorganized he has no longer any credit.

APPENDIX

A LESSON FROM GERMANY

In the commerce of the world, the United States has established itself in a manner unparalleled by any other nation. However, in gaining our supremacy we have not found it necessary to economize

is especially a case in point, because, at the time of the organization of the syndicate, the circumstances were similar to those existing in America at present. It is possible, therefore, that we may profit by a study of their experience which has solved the problem for them after they had endured a most disastrous and trying period extending over thirty years. As early as 1850 the mine operators of the Westfalia District suffered from severe competition due to overproduction, and various efforts were made to find relief. Price agreements, which are

not forbidden by the German law, were disregarded, notwithstanding the very heavy penalties imposed for violations. Finally in 1885 the Westfalia Syndicate was established and continues to date. It is a selling organization without any properties and only a very nominal working capital. Its affairs are administered by an official who has no financial interest in the mines and acts as chairman of a board made up of one representative from each participating company. The function of the Syndicate is to sell the product of the mines, coke ovens and briquetting plants, and to allot to each company the tonnage which it should produce. Twice each year an estimate of the probable requirements is made, and the tonnage is allotted to each company, based upon previous production after making allowance for tonnage to companies consuming a part of their own production, such as railways, furnaces, etc. On the first of May each company is notified how much coal it will be called upon to furnish during the second half of the calendar year, and each mine can make its arrangement for the most economical production of the tonnage called for. Any company falling short in its supply, if market conditions continue as anticipated, must pay damages for the shortage, unless the deficit can be made up by another company. Losses due to inferior preparation are borne by the company responsible for the same. Prices are agreed upon and fixed in advance semi-annually and take into account the quality of coal produced from each mine, making it immaterial to the purchaser where the coal comes from, because of the adjustment of price to the intrinsic value of the material sold.

It has happened that by some unforeseen condition, the Syndicate was not able to market through its ordinary trade channels the estimated quantities of coal and other markets had to be entered in order to permit the mines to operate under the most economical conditions. Losses due to these conditions are borne alike by all, the Syndicate paying to the participants the price agreed upon, having retained a commission, from which all deficits are paid. The advantages of

a single seller marketing 50,000,000 tons of coal a year are apparent. Markets are available to the Syndicate which individual operators could not reach. The Syndicate contracts are made for five-year periods, which assures an income to the operators and enables them to finance their properties and engage in business more remunerative but requiring large investments, such as the coking, by-product and briquetting plants. Such financing would be impossible with the uncertainties of ordinary competition. The higher returns have enabled the expenditure of money for improved equipment, safety measures, and installation of labor saving devices quite unknown in this country. Complete extraction of coal is required by the Government, and it is estimated that the cost of flushing to sustain overlying stratas and permit removal of all coal adds twenty-five cents per ton to the production cost.

The coal operators are enabled to provide funds for the protection of the injured and killed employes and their families, provide pensions for the incapacitated and aged employes. The cost of this social insurance in 1909 was twenty cents per ton of the production.

The higher coal prices which followed the establishment of the Syndicate have not been protested by the coal consumer. It has been generally accepted as the best expedient in solving a most vexatious question. Undoubtedly more care and economy in the use of coal resulted by the adoption of more economical engines and improved boiler settings.

The Westfalia production increased from 1,665,000 in 1850 to 81,000,000 tons in 1907; at the same time the number of companies was reduced from 100 to 76, indicating growth of individual companies and concentration of capital. The seventeen companies in the Syndicate whose output was sold for commercial use and who were not allied with fuel consuming industries had an aggregate annual production of 28,000,000 tons and a capitalization of \$72,450,000, which is an average of \$4,200,000 each. This indicates an investment of \$2.50 per ton of annual production in plant and equipment, only all the coal being owned by the Government.

For Illinois the capital investment in 1909 was \$1.49; in Indiana \$2.44 per ton of annual production, which latter, however, includes the coal rights, and represent the major portion of the investment.

A PERTINENT PARAPHRASE

As a final thought on this subject, these operators offer a paraphrase of Commissioner Daniels' dissenting opinion when the Interstate Commerce Commission, on July 29, 1914, handed down its decision in the "Eastern Railroads Advance Rate Case." It reads as follows:

"The world-wide phenomenon of rising prices is by this time no novelty. Since 1906 the average rise in the world's price level is estimated by competent statisticians as from 30 to 50 per cent. It has mirrored itself in the raising cost of living; it has evoked, and most properly, advances in wages and salaries; it has coincided with an increase in the nominal rate of interest where part of the interest so-called is but compensation for the anticipated depreciation of the capital sum later to be repaid.

"This rise in the price level must eventually be reckoned with in railroad-ing (coal mining). For a time its effects may be masked by adventitious increases in the volume of traffic (tonnage), but this temporary relief in its very nature is uncertain, and sooner or later this difficulty is sure to reappear. For a time it may be circumvented by extraordinary economies, but in its nature it is inexorable. It must be faced, but not trifled with. It is hardly an adequate remedy to accord to carriers (coal producers) relief only when their returns have reached the well-nigh desperate level now shown.

"A living wage is as necessary for a railroad (coal corporation) as for an individual. A carrier (coal producing company) without a sufficient return to cover costs and obtain in addition a margin of profit large enough to attract new capital for extensions and improvements cannot permanently render service commensurate with the needs of the public."

CONCURRING OPINION OF LABOR

Excerpts from the testimony given July 22, 1914, by Mr. Duncan McDon-

ald, secretary-treasurer U. M. W. of A. (District No. 12—Illinois.) See page 7.

Mr. Thompson: Is there any other thing you would like to say, Mr. McDonald, now, with reference particularly to the industrial conditions existing in the Illinois coal fields, other than what has been said by Mr. Walker and Mr. Bent?

Mr. McDonald: Well, the industrial conditions in Illinois now in the mining industry are the worst that I have ever known in my experience. There are more idle men in Illinois this summer than we ever had before. Scarce a day goes by, or in fact, every day, there are some 50,000 out of employment in Illinois in the mining industry alone. The same men are not idle every day. They may get a day's work this week, and perhaps a half day's work next week. But as a general proposition since the first of April we have had approximately 40,000 men idle all of the time, and 20,000 others idle a greater portion of the time.

* * * *

Mr. Thompson: What remedy would you suggest for this last condition you have spoken of?

Mr. McDonald: I know of no remedy, except the people, or the government, or the state—the public will take over the industry and regulate it in such a manner that we won't have six mines where there is only business for one.

At the present time I know of no law that will prevent men from investing their money in mines and developing them if they see fit. We have now several companies in the state who are sinking new mines, notwithstanding the fact that there is no work now for more than a third of the men, and the equipment is either running one-third of the time, or one-third of it is idle all the time.

Mr. Thompson: Did you hear the suggestion of Mr. Bent with reference to that subject, and how he thinks it could be handled?

Mr. McDonald: In reference to the German law?

Mr. Thompson: The German law, yes, and in fact—

Mr. McDonald: Yes. I personally favored that before the Efficiency Com-

mission in Springfield a short while ago. But the fear I have is that it requires so much time to put into operation the law that he suggests that it is going to be a long time before we arrive at results.

* * * *

Mr. Thompson: Is there anything further you would like to say about the conditions in the Illinois coal fields?

Mr. McDonald: I feel this way, that under the present arrangement, largely by reason of the competition between the companies in this state and the companies in other states, there is a very great waste in the present method of producing coal. Some of the mines in the state are only getting out approximately 60 per cent of the coal, where in reality they should get out at least 90 per cent of the coal. There is a great waste in the resources of the country in that way. This is due, I believe, in large measure to competition and the desire to get profits as early as possible after the mine is sunk, and the desire to get the coal as cheaply as possible, without regard either to the product or to the welfare of the miners employed in the mines.

WASHINGTON STATE AT THE EXPOSITIONS

The State of Washington is to have mine exhibits at the San Francisco and San Diego Expositions this year. A fine collection of the state's minerals has been made. The College of Mines of the University of Washington is preparing a type exhibit of the rocks of the state for a collection to be sent to each of the high schools of the state. The collection is to be accompanied by a bulletin

written by the staff of the College of Mines. The bulletin will serve as a textbook for the use of students and all others interested in the geology and mineral resources of the state.

MONTANA SEEKS RADIUM

The geological department of the University of Montana is testing ore samples with a view of discovering radium in that state. The tests are being made with new apparatus recently installed. Thus far but one specimen of ore examined has shown traces of radio activity, this having been received from Princeton, Mont. Slight traces of such activity were noted.

ONE THIRD LESS IRON ORE MINED

The production of iron ore in the United States during 1914 fell short by 33 per cent than total amount mined in 1913, according to the Geological Survey. The estimated production for 1914 is between 41,000,000 and 42,500,000 long tons of iron ore against 61,980,437 long tons mined in 1913.

In the Lake Superior district, where about 85 per cent of the domestic iron ore is mined, the average decrease in production was about 37 per cent, thus indicating a total production for that district of about 32,915,000 long tons in 1914, compared with 52,518,158 long tons mined in 1913. The shipments of ore from this district apparently decreased about 34 per cent, and accordingly the shipments should approximate 32,790,000 long tons in 1914, compared with 50,168,134 long tons in 1913.

MINE TAXATION

Report of the Committee as Approved by the Seventeenth Annual Session of the American Mining Congress, Phoenix, Ariz., December 7-11, 1914

Mr. Chairman and Members of the American Mining Congress:

Gentlemen—The committee on Mine Taxation of the National Tax Association, in reporting to the Association's meeting, held at Buffalo in October, 1913, said:

The subject submitted to the committee is an exceedingly complex one, and on many of the phases the committee feels the need of longer time for study and investigation. For that purpose it is recommended that the committee be continued.

It appears that the action heretofore taken by the American Mining Congress as such, and by its individual members in their respective localities, has begun to bear fruit; and has resulted, at least, in persuading the members of the National Tax Association, as well as the various assessors and tax commissioners who are members thereof, that the taxation of mines is a subject worthy of careful consideration, having its own peculiarities, requiring special treatment and of sufficient importance to justify a standing committee.

It is the belief of this Committee that mining claims, for taxation purposes, may always be safely divided into two distinct classes, *i. e.*, nonproducing mining claims and producing mining claims.

NONPRODUCING MINING CLAIMS

No matter for what reason a mining claim may be nonproductive, it should be classed as a nonproducing mining claim, and no value attached for taxation purposes, by reason of the existence of known mineral contents, unless that mineral is being actually marketed at profit.

The Legislature of different States have shown surprising variation when guessing (it can be termed nothing else) at the value of nonproducing mining claims for taxation purposes; for instance, in Montana nonproducing mining claims are assessed at a value of \$5 per acre, while in Nevada they are assessed

at \$50 per acre, and in another state, under the tax law, it is provided that the nonproducing claims, when owned by a corporation, may be assessed at a value represented by the capital stock of the corporation.

One of the members of this Committee, in a paper submitted at the last convention of The American Mining Congress, suggested that the proper criterion for the assessment of nonproducing mining claims was the price at which the Federal Government sold the ground to the patentee, to wit: \$5 per acre; and submitted the query that if this was not proper, in fact the only, criterion of the value of such ground, then what was? This committee has neither seen nor heard a direct answer to this query; but the committee of the National Tax Association, above referred to, did say:

The mineral content and value of unexplored and undeveloped ore bodies, patented mines and mining claims is frequently so uncertain that for this class of property there is ample justification for conservative treatment, and even for postponing the full possible claim of the State until actual knowledge of the situation can be obtained.

Along this same thought the committee notes an expression in the report of the Wisconsin Tax Commission for 1910, where it is stated:

It would be more logical and tend to better administration if the lands (nonproducing mining claims) were assessed without regard to the minerals.

This committee appreciates that nonproducing mining claims ought to be assessed and a reasonable tax collected therefrom; but since no man can tell whether a nonproducing mining claim is of any value, until actual operation begins, it submits that the only fair and reasonable rule is as follows:

Nonproducing mining claims should not be assessed upon a value higher than adjacent land, *not* assessed for mining purposes, is assessed.

PRODUCING MINING CLAIMS

It is safe to say that the producing mining claims will pay the great bulk of the mining taxes in any State, wherefore this committee has devoted more attention to the question of the proper basis of taxation of producing than of non-producing mining claims. There appear to be two well defined theories for the taxation of producing mining claims. One, an ad-valorem tax, and the other an income tax.

This committee is firmly of the opinion that a tax upon the net income of producing claims is the only method which is fair to the State, in the first place, to the mining industry in the second place, and between the various producing claims of a State or district in the third place.

The vices of the ad-valorem system of taxation of mining claims become apparent upon a superficial study of the subject, and become expensive and disagreeable realities wherever and whenever the system is in vogue.

The State of Michigan, when putting a system of taxation of mines on an ad-valorem basis into operation, went so far as to employ a very competent engineer to make an appraisal of the value of the mines and mineral lands within each taxing district. This was an attempt by that State, of course, to operate the ad-valorem system upon as fair a basis as was possible to the State and the mining industry. The value of the mines to be taxed upon that system was calculated upon the following main factors:

A. Ore reserves. B. Average annual production. C. Cost of production. D. Average price to be obtained for product. E. Average annual profit, and F. Rate of interest of value of money.

It would seem at first blush, that the factors taken into consideration ought to result in a proper valuation of the mines for taxation purposes; but that such uncertainties as would render the system impracticable for taxation purposes were bound to obtain have been very closely demonstrated in a recent scholarly article by Mr. Heath Steele, of New York, who says:

No one can dispute that a stated annual income for a certain number of years has a present value easily determined at a fixed rate of interest. If this were all for a correct appraisal, I should not question the fairness of this system of taxing. But as my idea of the principle involved requires a system which takes from each in the same proportion, there must be no liability of error in the method of assessment. Working from this point of view let us take up each main factor as previously stated.

A. To arrive at the amount of ore to be considered in an appraisal of this kind we must not only consider fully developed ore but all indications for further extensions of ore bodies beyond mine openings. Here we run into difficulties much greater than are encountered in measuring developed ore. The developed ore factor is more or less approximate, but estimates of further extensions are bound to vary greatly from fact. However, these are not the only obstacles in the way of a correct statement of ore reserves. The average content of valuable minerals is a very difficult factor to determine correctly for a large ore reserve and is in most cases a guess, regardless of elaborate sampling and inferences that may be drawn as to the uniform contents within certain blocks. The best we can do is to concede that the ore reserve factor is an estimate consisting of two basic factors, both of which may be wrong.

B. The factor of average annual production not only serves to determine the length of life, but the average annual profit. If the rate of production is greater than estimated the profit will be more or vice versa. B is dependent upon A and is subject to the errors of A.

C. The cost of production may be closely estimated. I say estimated because no matter how much of a record one may have to judge from future expectations in connection with costs are no more infallible than the assumption of the ore reserve factor. This is particularly true where metals of changing value are involved, for, granting the cost per ton of ore is the minimum, a lowering of the grade of metal content will increase the cost of the metal.

D. The factor of average price to be obtained for the product is a presumption and nothing else. One man's judgment may be better than another's because he has studied the supply and demand and is conversant with all market-governing factors, but we cannot grant him the powers of a true prophet.

E. This factor, the average annual profit excepted, is the sum in all the errors of A, B, C, and D, all of which will reflect in the profit. If the average price to be received for the product is a correct assumption, so far as it relates to the average price for the whole period, the average annual profits may be the sum estimated. But the present value obtained by this calculation and the present value that may be obtained at the exhaustion of the mine with the actual annual earnings as a basis will hardly be the same. This is

particularly true with the metals that fluctuate widely in price. If, during the first half of the operating period, the price of metal should be lower than the average used, the actual present value of the property will be less than estimated. If higher prices are secured the value will be raised. A fair check will only be made when a practically uniform price prevails or the highest prices are received during the middle of the period.

F. The rate of interest is a factor that may be adjusted to suit the individual in private work. For taxation purposes the worth of money is a debatable question, but a rate should be used that will represent the actual earning power of the money without special effort. If the business is hazardous, all factors of safety will properly have been provided in the basic factors.

Here it is shown that the only calculation involved in mine appraisal for which we can absolutely vouch as being correct is the deferring of the expected annual income at a fixed rate of interest. We may have errors in each of the five main factors, together with those in the basic factors of which they are composed. I do not think that the most ardent advocate of mine taxation on a valuation basis will, if he considers the presumptive character of the data necessarily involved, contend that an equitable distribution of tax burdens can be accomplished by this method. It is impossible to value any mine correctly until it has been worked out; therefore, if we attempt to value a number of mines in a taxing district, some will surely be assessed too high and some too low.

It is because of those things pointed out by Mr. Steele that such great students of taxation as Professor Skelton, of Queen's University, Kingston, Ontario, has said:

The positive reason for preferring the tax on the output is its greater certainty. Any estimate of the value of the minerals in the ground must, it is felt, contain a large element of guess work—diligent and scientific guess work it may be, but guesswork still.

And Professor Edward A. Seligman, McVickar Professor of Political Economy of Columbia University and President of the National Tax Association 1913-14, said:

The difference between the earnings system and the ad-valorem system is the difference between publicity and secrecy, between certainty and arbitrariness, between simplicity and complexity, between precision and guesswork—in short, between modernism and medievalism.

If then, the earnings tax is to be preferred to the ad-valorem tax, the question remains. Shall it be gross earnings or net earnings? As a matter of principle it is conceded by

all writers that net earnings approach more closely to the ideal method.

If, then, an ad-valorem system of taxation of producing mines is wrong—and the experience of mining men, tax experts and college professors who have made it a special study, to say nothing of the practical demonstration of it when in operation, all show it to be wrong—then there remains but one other method for the taxation of producing mining claims, to wit, a tax upon income.

The first question to be determined upon a tax upon income is whether the whole or any portion of the gross production should be included in the valuation of the mine for taxation purposes.

There is no question in the minds of this committee that a portion of the gross should be included; and the point may be illustrated by the existing conditions in Colorado and Arizona; such being, we believe, fair examples of the results obtained and to obtain wherever the gross proceeds are considered in valuing a mine for taxation purposes.

The Colorado law provides that one-half of the gross plus all of the net shall be the value of the producing mine for taxation purposes. A couple of very extreme examples will illustrate the possibilities of this law in its operation, as between producing mines under differing conditions; for instance:

First extreme—Mine A. B. produced \$100,000 gross in given year; its entire expense was \$1,000; its net, therefore, is \$99,000. Its tax value, therefore, would be calculated thus:

One half gross	\$ 50,000
All net	99,000
Tax value	\$149,000
Rate 3 per cent, \$4,470; approx. 4 1-2 per cent of net.	

Second extreme—Mine C. D. produced \$100,000 gross in a given year; its entire expense was \$99,000; its net, therefore, is \$1,000; its tax value, therefore, would be calculated thus:

One half gross	\$50,000
All net	1,000
Tax value	\$51,000

Rate 3 per cent, \$1,530—153 per cent of net.

Of course no mine producing \$100,000 gross per year is going to have either \$1,000 or \$99,000 net, but some figure between these extremes; however, it is a simple calculation to demonstrate what two mines producing \$100,000 gross per annum, one with a net of \$50,000 and the other with a net of \$25,000 will have a differential running against the mine with \$25,000 net (on a 3 per cent rate) of approximately 50 per cent.

In fact, in a recent case decided by the District Court of Teller County, Colorado, the actual disparagement existing between two well known mines are shown in the words of the Court, as follows:

By way of illustrating the inequality resulting in this case, I call attention to the following:

It is shown by the evidence that the Cresson Company's gross proceeds for the year 1913 were \$537,603.58; its net proceeds \$373,140; assessment under the Act 1913, one-half gross proceeds plus net \$641,941.79. The Portland Company's gross proceeds for the year 1913 were \$862,642.34; its net proceeds \$315,160; assessment under the Act 1913, one-half gross proceeds plus net \$746,481.17. It will be noted that the gross proceeds of the Portland exceeds those of the Cresson Company by over \$325,000; that the net proceeds of the Cresson Company exceeding those of the Portland Company nearly \$58,000, while the Portland was assessed, under the Act of 1913, on over \$104,000 more than the Cresson. Such gross inequality as the above cannot be avoided if the Act of 1913 is to be upheld as a valid exercise of the legislative power. It is manifestly arbitrary and unjust, and lacking in the uniformity required by the constitution.

The same results in a lesser degree must obtain in Arizona, where the law provides for the valuation of a producing claim for taxation purposes upon a basis of 12 1-2 per cent of the gross plus four times the net, using the same extreme examples that were used to illustrate the Colorado situation, it will be found that the mine with \$99,000 net will pay a tax equivalent to 12½ per cent of its net; and a mine with \$1,000 net will pay a tax equivalent to 50 per cent of its net; and in the examples illustrating the Colorado difference between the mines with a net of \$50,000 and \$25,000, there will be a differential against the mine with a \$25,000 net of approximately 8 1-2 per cent. The rea-

son, of course, that there is not such a difference between the \$50,000 net and the \$25,000 net in Arizona, as there is in Colorado, is because in Arizona only 12 1-2 per cent of the gross is used for valuation purposes. That the Colorado law works out as illustrated in the above examples and in the Cresson-Portland case, is verified by the fact that in the year 1913 the gross production of the Colorado metal mines was \$35,450,585. (U. S. Geol. Sur. 1913, p. 227.) While metalliferous mining properties were assessed for the same year \$46,042,047. (Colo. Tax Com. Rept., 1913, p. 129.) Thus it will be seen that the metalliferous mines of Colorado paid taxes on approximately \$10,600,000 more than they made in the year 1913.

Not only do states, which provide for the assessment of all or a portion of the gross and all or more of the net, offend man's natural sense of right and justice, but they likewise offend two fundamental principles of law concerning taxation which have been written into most if not all of the constitutions of the various states of the union. These constitutional provisions vary in their terms, but the sense of them is the same and the following excerpts from a state constitution will serve to illustrate the principle that is written into most of them:

(a) All taxes shall be uniform upon the same class of subjects within the territorial limits of the authority levying the taxes.

(b). All taxes shall be levied and collected under general laws, which shall prescribe same class of subjects, within the territorial ation for taxation.

The lack of uniformity required by such constitutional provisions, the gross inequality inhibited, and the absurdity of such a system of taxation are all, at once, manifest from the above examples.

Everyone knows that uniformity in taxation implies *equality* in the burden of taxation, and that all taxes must be uniform on the same class of property within the jurisdiction of the authority levying and collecting taxes and that this uniformity must be such as to result in equality of the burden.

There can be no claim of uniformity or equality where a profitable mine pays taxes at the rate of 4½ per cent of its

net, and an unprofitable mine pays taxes at the rate of 153 per cent of its net.

Not only this, but it will be readily seen that a system which taxes both gross and net must of necessity result in a double taxation; for instance, where the taxing scheme is to tax one-half the gross, plus all of the net, then one-half of the net is twice taxed; *i. e.*, first, when it is taxed, as net, and, second, when it is taxed as a portion of the gross.

The same Committee of the National Tax Association, in their report, say:

We are opposed for the class of mines now under consideration to be so-called gross and net methods of taxation. Gross income bears no uniform relation either to net income or to value. A mine with a gross income in any year of \$100,000 may have lost money and have no more ore to mine, or it may have made \$50,000 and have thirty such years to look forward to in the future, or it may have made \$10,000 net and have five years of similar business to look forward to in the future. With mines of very short life the gross income method tends to make the tax excessive. With mines of long life and relatively low cost of production, the method tends to yield an insufficient tax. As between mines, it is almost always unjust and unequal.

CONCLUSIONS

If this committee is right in its conclusions that an ad-valorem system of taxation is not applicable to the mining industry from any angle; and that an income tax, which includes any portion of the gross, is wrong for the reason assigned; then it remains only to determine what is a proper system of taxation on the net alone.

Upon this question men may conscientiously differ a great deal. This Committee feels, however, that a few salient principles, for such taxation will be accepted as fair to all concerned, *i. e.*:

(a) That a uniform system for determining what is meant by the term "net proceeds" should be adopted by the law-making power.

This is a principle which, following the Interstate Commerce Commission, has been written into the laws of many

of our States that have provided Public Utility Commissions. These Commissions are required to adopt uniform systems of accounting, so that the amount earned by each Public Utility in the State may be shown. There seems no good reason why a uniform system of accounting cannot be prescribed for the various mines of a state.

Respectfully submitted,

L. A. Young,
H. A. E. Chandler,
John Wellington Finch,
Will L. Clark,
D. L. Webb, chairman.

FALLING OFF IN COPPER

According to figures and estimates prepared by B. S. Butler, of the United States Geological Survey, the copper production of the country for 1914 will show a marked falling off from that of 1913. At an average price of about 13.5 cents a pound, the 1914 output has a value of \$152,400,000, compared with \$189,795,000 for the 1913 output. The large decrease in production in 1914 was due, it is claimed, to curtailment of production during the latter part of the year on account of the reduction in tonnage exported to Europe.

After the outbreak of the European War copper sold considerably below the yearly average, but toward the close of the year the price showed notable improvement.

New Mexico and Michigan are the only two states recorded in the report as showing an increase in copper production over the figures for 1913. Arizona, Montana, Nevada, California, Tennessee and Alaska all show a decrease, while Utah is reported to have shown practically the same figures for both periods. Arizona continues to hold first place as the state producing the greatest number of pounds of the metal, with an output of 380,000,000 pounds.

EXCERPTS FROM PRESIDENT'S ANNUAL ADDRESS

BEFORE THE 17th SESSION OF THE AMERICAN MINING CONGRESS
PHOENIX, ARIZONA, DEC. 11, 1914

BY MR. CARL SCHOLZ, CHICAGO, ILL.

The aim and purpose of the American Mining Congress has been placed before the membership and mining interests so often in recent years that it becomes unnecessary to reiterate them now. There is no doubt that the need for this organization has become greater, that its efforts are more appreciated, and that it occupies a stronger position now than at any previous time. That its good work is valued by others than the metal miners of the West is evidenced by the active interest taken in its work by the coal mine operators, more particularly since the Chicago meeting of 1911.

It may be appropriate at this time to state that the coal operators joined the American Mining Congress because they felt it was the best organization in existence to carry out the work in hand, having an established standing and working machinery. Efforts to start cooperative work among the coal operators had failed and The American Mining Congress was considered the best organization which could be helpful to the coal mine operators, as it had been in the metal mining business.

It has been hinted that some of the metal miners felt the coal people were trying to monopolize the Mining Congress, but let me assure you now that such is not the case. Mining is mining, whether the product be coal or gold or ore. Our interests are identical, whether the miners are located in Arizona or Pennsylvania. The chief topic of this address, therefore, is to urge cooperation and combined efforts toward improvement in the mining industry, irrespective of the location of the mines or the character of their product.

The methods of modern business within the short time of our experience have undergone great changes. The ad-

vance from the tallow dip to the Tungsten lamp in the lighting of our homes may be considered a fair comparison. In the first half of the past century the perplexing question of big business had not made its appearance. When owners were coworkers there was little need for legislative regulation or supervision. Man had not specialized upon a single occupation or depended solely upon it for his livelihood. Trade unions had not restricted the working hours or output of individuals. The relations between employes and employers were closer, and personal equations were more pronounced. There was little need for contracts and intricate agreements—a man's word was his bond. I do not intend to convey the impression that modern business is altogether bad, but it certainly is different, and to some it may seem better. The question we must naturally ask ourselves is, have we contributed our share toward the solution of these great problems which necessarily follow in the wake of tremendous development such as this country has undergone. We have a different people to deal with and a different government to regulate our affairs; therefore, cannot look to other countries for precedents to follow. We have business varying from the smallest unit of the single prospector to the largest mining corporation, with many grades between these two. To properly protect these great varieties of investors and workers, to give each his due share, is an undertaking of the greatest importance.

Mining in a measure is the administration of a public property insofar as it is an estate not created by man and which cannot be replaced once it is removed or used. Geographical lines, so sharply drawn for political purposes, must be lost sight of in mining, because

the different states not containing any mineral resources are dependent upon their supply from the more favorable sections. Unlike the manufacturing or farming industries, the sources for mining cannot be shifted, and yet its products are needed everywhere. The enormous coal deposits of the far Northwest are of little interest to the state of New York as long as there is an available coal supply in Pennsylvania, but New York is concerned in the situation of its present coal supply because if it is exhausted sooner by waste, that section of the country will have to depend upon a supply located elsewhere, which will be more costly to obtain. The sections with small or no mining interests are usually large consumers of mining products, and the metal manufacturing sections with their established population and industries depend upon the fuel and ores of the mining states for their very existence. Mining, therefore, is distinctly an interstate business and of interstate value. Some regulation has been considered in this respect; for instance, in the state of Oklahoma in fixing a minimum price at which gas or oil from its wells should be sold.

I am not competent to speak authoritatively on the great amount of mineral resources available, but I have often endeavored to reconcile the statements published by the United States Geological Survey on the vast amount of coal available in certain fields with which I am quite familiar. These statements refer to all the coal in existence without distinguishing as to the cost of extraction or whether actual conditions may make its mining impossible; in fact, all government reports are silent on this point, and the ordinary reader naturally believes that the billions of tons of coal available can be produced at no greater cost than the present supply. This cannot be true, and sooner than the average man believes we will be forced to recognize the fact that even the largest coal fields are being exhausted very rapidly and that the remaining coal while available will cost many times over their present cost of production.

We can only speak with words of the

highest praise of the work accomplished by the Bureau of Mines during its short existence, and at the same time decry the limited support which this bureau receives from the national government. The appropriations are too small to even investigate the physical features of mining, and unfortunately the bureau is not in a position to be of any assistance or even investigate the economic sides of the industry. The only statistics collected now deal with the mine accidents, and the only information on economics is collected by the census every ten years and the information when furnished two or three years later is of practically no value on account of the great delay. Other branches of the government do a great deal for their constituents. I have in mind the crop reports which are collected by the Agricultural Department largely by telegraph and which are furnished very frequently to the farmers and dealers in farm products, to the great advantage of both.

Congress convenes at Washington today, and there is necessity for aggressive and constructive legislation. Mine operators have been contenting themselves more or less with defensive measures, but I wish to urge not only for the best and strongest representation at Washington and at the various state capitals but also for the introduction of measures deemed necessary to the best interests of mining.

At this occasion I want to make clear the oft misunderstood purpose of the maintenance of the Washington office by the American Mining Congress, some members having expressed themselves as not being in favor of maintaining a lobby, feeling that it was degrading to the Congress and not worthy of the industry. This attitude and misconception must be corrected. Our representation at Washington is not for the purpose of unduly influencing Congress in our favor or obtaining concessions by unfair means. It is there for the purpose of aiding our lawmakers in the protection of the industry and advising them of our needs. With all due deference to the make-up of our state and national legislative bodies, it is not reasonable that we

should expect of them a thorough knowledge of all affairs of this great country and the needs of the great multiplicity of interests and industries therein. It is not only a necessity but a duty of each industry to have at convenient reach representatives who may inform and consult with congressmen on matters pertaining to their respective lines of business. Every day new problems arise, regarding which the congressman removed from his home conditions cannot be kept posted unless he is constantly informed by a reliable source. It is not reasonable that we should expect other interests to champion our cause, and I would recommend that each mine owner, even if he is not a member of this organization, advise his respective senator and congressman that the American Mining Congress is the representative of his respective company in matters pertaining to the mining industry and will gladly furnish correctly and concisely such information as may be called for.

I wish to invite your especial attention to two subjects which are going to be discussed at this session and which I regard of the greatest importance; namely, the arbitration of industrial disputes and the progress of the Workmen's Compensation Committee. The former is a subject little discussed up to this time. Under our Constitution no compulsory measure can be enforced. It must remain a matter of honor between the two interests, to avoid industrial conflicts. It is not fair to ask employers to yield to unreasonable demands of employees because of any special or unusual business conditions existing, or by this denial, bring about business interruptions or even bloodshed. Likewise, it is not proper that employers should take undue advantage of their men under stress. Such actions encourage discrimination or other unreasonable attitudes at opportune occasions. Interruptions to mining do not end by affecting the employers and mine owners; the damage to the consumer and user of mining products may be much greater. I need only call attention to the expense which our coal consumers are put to every two years by storing vast quantities of coal in the face of uncer-

tainty regarding the renewal of expiring wage agreements. Appeal to the patriotic spirit is not a cure, and it is proper that we duly consider the best solution of the subject by discussing it from every viewpoint and form some basic opinions.

State legislation is more or less contagious—if one State considers a certain measure, and particularly one which meets popular favor, other States will endeavor to adopt it. The Workmen's Compensation Bills have furnished their share of opportunity to the spectacular politicians by supporting this popular legislation, frequently under the disguise of desiring to appear more progressive and liberal than neighboring States. Many bills have been proposed which are unworthy of the cause they represent, and modifications will be proposed at the coming sessions. There is no question but that each industry should bear the cost of its toll of life and injuries. The injured workmen or their families should not be dependent upon charity. There can be no difference between the services of a soldier who draws a pension for giving his services to his country to defend it in case of war for, perhaps, only a short time and the workman who gives his entire life to build it up. The employer, to meet these expenses, must be placed in a position to earn the cost of this protection. The schedules of compensation must be fair to both sides, else the employers will not place themselves under the acts, which are optional and under our Constitution cannot be made compulsory. The present method of litigation is wasteful, deprives the needy at the time when assistance is of the greatest value, often giving the greater sums to those least entitled, at the expense of those really deserving. This condition should not be permitted to continue. My own opinions differ somewhat from the expressed view of our Committee, insofar as I believe the workmen should contribute a part of the cost of this insurance. It will make the plan more valuable to them. Their self interest will prevent unfair payments, because increases would have to be borne in part by themselves. Their ability to contribute can only be measured by the

readiness with which the organized men pay dues, an assessment of about two per cent of their gross earnings being given to the union fund of the organized coal fields. Should they contribute an equal amount to the Compensation Fund in addition to the equivalent added by the employers, we would have a fund of three to three and a half cents per ton of coal, which is considered adequate at this time. Such contributions would entitle them to representation in the administration of the fund, which should be kept out of the reach of political influence.

The unusually depressed condition of the mining industry prevailing at this time has required more than the ordinary attention and time of the operators and mining officers, and has prevented many from more active cooperation with this work. Your directors and officers have not been able to give as much time to this work as was expressed at the Philadelphia convention; nevertheless, we have advanced, and I take this opportunity to thank the directors and members for their cordial and generous support. Many promises have been made, which will be handed as a heritage to my successor in office, who I am sure will be able to convert them into cash as soon as the financial situation improves, and I feel that the outlook for the Mining Congress is more encouraging now than at any time since its organization.

MINE INSPECTOR LOSES LIFE

Government Mine Inspector Evans, at Coal Creek Mine, near Fernie, B. C., was overcome by gas and died, following an explosion in a mine in the Crow's Nest Pass district, January 2. Inspector Evans entered the workings with rescue apparatus. He was removed unconscious and failed to revive. The workmen had had notice of coming danger and all got safely out. Three men who were at the mine entrance were badly but not fatally injured, the explosion being followed by a great volume of dust and flame. A horse at the mine mouth was blown to atoms and buildings in the immediate vicinity were completely demolished.

SHORTAGE IN COAL PRODUCTION

The nation's coal production for 1914 fell short by 60,000,000 short tons, the total coal output for the preceding year, according to reports made to the United States Geological Survey. The total coal production for 1914 is estimated at 510,000,000. Practically all of the decrease was in the output of the bituminous coal mines. Pennsylvania's production of anthracite was practically that of 1913.

The report states that in the year just ended about 1,000,000 tons of anthracite coal, principally nut and steam sizes, went into storage, so that the quantity of anthracite actually marketed was approximately 1,000,000 tons less than that for 1913.

Depression in the lumber trade of the Pacific northwest and the increasing use of petroleum for fuel in California and other western states are suggested in the report as possible reasons for reduced production of coal in the west. The principal decreases, however, according to the report, were in the coking districts in the bituminous coal fields of the east. In Pennsylvania alone, the report says, the estimated decrease in production of bituminous coal was between 20,000,000 and 25,000,000 tons. The larger part of this decrease, according to the report, was in Fayette and Westmoreland Counties, in which are located the Connellsville and Lower Connellsville coking districts.

KENTUCKY INCREASES COAL OUTPUT

Kentucky's coal output for 1914 is approximately 20,000,000 tons, a slight increase over the production of 1913, which was 19,616,600 tons. The development in Eastern Kentucky is responsible for the increase as there was a decline in the Western field. Kentucky, with the exception of West Virginia, is the only southern state to show an increased output. Under less favorable conditions, Kentucky's showing would have been especially gratifying. The outlook for Kentucky as a great coal producing state is bright.

METALLURGICAL RESEARCH AND MINE SAFETY STATIONS

The Foster Bill, H. R. 15869, will be called up for consideration by Dr. Foster, chairman of the House Committee on Mines and Mining on Monday, February first.

Every effort will be made to secure the enactment of the bill for which a two-third majority is required. The bill is as follows:

A BILL

To provide for the establishment and maintenance of mining experiment and mine safety stations for making investigations and disseminating information among employes in mining, quarrying, metallurgical, and other mineral industries, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior is hereby authorized and directed to establish and maintain in the several important mining regions of the United States and the Territory of Alaska, under the Bureau of Mines and in accordance with the provisions of the Act establishing said bureau, ten mining experiment stations and fifteen mine safety stations, movable or stationary, the province and duty of which shall be to make investigations and disseminate information with a view to improving conditions in the mining, quarrying, metallurgical, and other mineral industries, safeguarding life among employes, preventing unnecessary waste of resources, and otherwise contributing to the advancement of these industries.

Sec. 2. That the Secretary of the Interior is hereby authorized to accept lands, buildings, or other contributions from the several States offering to cooperate in carrying out the purposes of this Act.

BRIEF IN SUPPORT OF H. R. 15869

There was recently in the United States a scattering epidemic of the foot and mouth disease among cattle, resulting in a rigid quarantine being established by the Department of Agriculture and the destruction of several hundred animals.

Immediately the Congressional machinery was started to reimburse the farmers for their losses and to appropriate funds to stamp out the disease and prevent its recurrence. Members of Congress suggested bills providing for this aid to the agricultural industry.

In the bill making appropriations for the Department of Agriculture for the next fiscal year, now before Congress, the committee has authorized an appropriation of two million, five hundred thousand dollars to take care of this situation.

In one of the best known metal-mining districts of the United States, in addition to the number of men killed by accident, in the year 1912, there were seven hundred and twenty deaths from miners' consumption, out of about 7,200 employed, ten per cent in one year. Ten years of such conditions wipes out an important mining camp. This almost unbelievable condition has apparently existed for many years with the loss of hundreds and hundreds of men. It is also stated that at the present time from thirty to sixty per cent of the miners employed in mining operations in this district now have tuberculosis.

In spite of this condition, and we know that miners' consumption is an occupational disease caused by stone dust in the mines, and largely preventable, there is no great national agitation and there has been no particular suggestion from Congress that an immediate appropriation should be granted to investigate the causes of this disgraceful condition and to obviate them.

In one instance you have the deaths of cattle through a highly contagious disease, the great National Government stepping in with \$2,500,000 to pay for the ravages of this disease and to exterminate it, and in the other you have the slaughter of human beings with no particular remedy or aid being suggested.

The point to all this is that agriculture is the best known and best cared for industry in the entire United States and that the mining industry, despite the fact that it is second in importance as a basic industry, is the worst understood and the least aided.

It is not that Congress intentionally discriminates against the mining industry; it is rather that every man connected with agriculture has been alive and energetic to any aid that the Federal Government might give to their industry, and, I regret to state, the unwillingness of the men in the mining industry to present their cause to Congress.

With the creation of the Federal Bureau of Mines some advance has been made, but the industry is still far behind agriculture in Federal recognition.

Now here is your chance to help:

There is now pending in Congress a bill to establish in the larger developed mining regions of the country fifteen movable mine-safety stations for rescue-cars, with a view to advancing more rapidly and in a more satisfactory manner the mine-safety educations and mine rescue work under the Bureau of Mines, and to establish fifteen experiment stations in important metal-mining regions in public land states, with a view to the advancement of the mining industry in those regions.

Deaths in the mines.—The Bureau of Mines finds that the progress it is making in the saving of life is extremely slow and it is one of the purposes of this bill to expedite this humanitarian work. In the year 1913, in the mines and quarries of this country, 3,651 men were killed, a death rate of 3.49 for each 1,000 employed.

No one likes to estimate the money value of a human life, but at times it becomes necessary to do this, especially in working out the economics of com-

pensation acts. It is a reasonable estimate that during the past ten years more than 30,000 men have been killed and more than 100,000 seriously injured in connection with the accidents in the mining industries of this country. It is impossible to estimate the number who have suffered from bad health conditions in many metal mining, tunneling, quarrying metallurgical, and other mineral industry plants. It is impossible to estimate the number of men with health shattered through these conditions who have had to give up their work for years before their natural time or the number of dependents who have suffered thereby.

If it be assumed that each human life is valued at \$3,000, it will be seen that the deaths alone in the mines have cost in the ten years \$90,000,000.

If each of the 100,000 seriously injured lost twenty days at three dollars per day, a reasonable assumption, this represents \$6,000,000 lost from this cause.

Whatever may be the value put upon human life in arranging for a reasonable compensation, these losses of life and labor are national in their extent and character and fall ultimately upon the general public as representing the consumers of mineral products.

A comprehensive investigation of conditions effecting the health of workers is one of the urgent existing needs of the mining industry. Such investigation would effect the health condition of one and a half million men employed in these several phases of the industry, and no one familiar with conditions will for a moment question its importance. In conducting it, the Bureau of Mines would have the active cooperation of the Public Health Service, which would study the different ways in which mine conditions affect the health of employes, while the Bureau of Mines would seek to ascertain the existence and the causes of bad health conditions and the methods of improving the same.

A large proportion of the men entering the mines in the United States each year come from the farms and villages of different European countries; they

are unfamiliar with our language, our institutions, and our laws, and know little or nothing of mining.

A majority of the men now working in the coal mines of the United States today speak and read but little English. It is therefore difficult to reach these men through publications, even when the latter are prepared in the most simple and elementary manner.

The Mine Rescue Cars.—The plan followed most successfully by the employes of the Bureau of Mines in reaching and interesting these men is through giving actual working demonstrations in mine rescue; first aid, and other safety measures and methods, and the giving of lectures illustrated with lantern slide pictures which contrast the safe and the dangerous methods. Each of these pictures used has a short, one line description under it in four or more different languages most common among the miners. In these lectures and demonstrations, local interpreters are used at intervals as the need for them may appear.

Work of this kind develops a new interest in the safety work among the miners, and following the movements of each of the existing rescue cars this interest on the part of the miners is shown in their call for the publications which treat of the mine-safety work.

So far as it has gone, this educational work is assuredly developing safer and better mining, and the leaders among the miners express the belief that if carried forward on a larger scale and in a more thorough manner, the work cannot fail to develop also better citizenship among these miners.

The work of the states in carrying out their part of this general program in mine safety is being carried forward in a reasonably satisfactory manner. The states are already expending in their inspection and police supervision work more than the Federal Government is expending in all of its investigations in behalf of mine safety. Thus, for example, a single state, Pennsylvania, maintains a well-organized and efficient inspection force which includes a chief and fifty district inspectors; it expends in the maintenance of the work \$213,000

per annum, paying its district inspectors an average compensation of \$3,000 each in addition to traveling expenses. All of the other coal-mining states maintain a system of inspection.

The Proposed Experiment Stations.—There are located within the boundaries of the several public-land states large bodies of low-grade ores of different types for the efficient treatment of which there are no known methods. There are other large deposits that are being worked in accordance with methods that are highly wasteful of valuable mineral products. On the public lands in these states there are many mineral deposits concerning the value of which little is at present known. These and other associated problems, general in character, will be investigated by the several mining experiment stations to be established in such regions, and it is believed that the results of such investigations will be not only beneficial to the industry but also to the general public.

Mining is usually regarded as an industry made up mainly of the operation of a few large, profitable properties, such as old Comstock mines in Nevada, the Treadwell mine in Alaska, or the Homestake mine in South Dakota. It is usually considered to be an industry controlled by a few parties, the owners of which large properties would gladly avail themselves of an opportunity to unload on the National Government the cost of conducting researches in which they are particularly interested. Therefore it is usually considered as an industry which should be allowed, and even required, to take care of itself. These assumptions are far from correct.

The facts of the situation are: These large, profitable properties are few in number; that, so far as known, their owners have never joined in a request for Government appropriations to aid the mining industry, nor have they been given any special consideration either in the establishment or in the plans of the Bureau of Mines. They have neither asked for assistance, nor have they endeavored to unload upon the Government any investigations of their own. On the contrary, at the request of the Bureau of Mines, a number of them have

expended considerable allotments of their own funds on investigations which promise to be useful not only to them, but to other less important mining developments in which they were in no way involved.

While the number of large mines in this country is small, there is a large number of small mines. The records show that in the country as a whole there are about 40,000 coal mines, metal mines, and quarries and about 170,000 oil wells, operated to a smaller or larger extent in connection with the mining operations. In addition to these there is a large number of operating plants connected with the smelting and other metallurgical operations and various mineral industry operations in different parts of the country. Few seem to appreciate the importance of helping those who hold these small properties to find methods of operation by which they can be worked at a profit instead of being helplessly transferred to a few large corporations who alone may have the funds for developing the processes that will make such operations possible.

What the Federal Government is Doing for Agriculture.—Congress is now appropriating as an aid to agricultural advancement nearly \$28,000,000 per annum, while mining is receiving through the Bureau of Mines and the United States Geological Survey less than \$2,000,000. The per capita contribution from the people of the United States for the advancement of agriculture amounts to twenty-eight cents and for mining two cents.

In referring to the aid given agriculture and mining by the Federal Government, Franklin K. Lane, Secretary of the Interior Department, recently said: "For a number of years Congress has been appropriating annually for the maintenance of experiment stations in behalf of agriculture in the several states an aggregate sum of nearly \$1,500,000. In addition to this, in the public land states the Federal Government has expended during the past 12 years, \$77,-

150,180 in the reclamation work of making available additional agricultural lands; and of this sum more than \$8,000,000 has come from the proceeds of the sale of mineral lands in the public land states.

"I mention these expenditures with no feeling other than that of approval; but in passing, I may call attention to the fact that the mining industry in this country does not appear to have had a square deal in the way of public recognition and aid. And in speaking of the mining industry, we need not especially concern ourselves about the profits of the few large mining companies. There are the many thousand small mine owners and prospectors struggling with difficult problems, there are the safety and welfare of the 2,000,000 employes in the various mining and mineral industries, and there are the other great national problems of waste in these industries, all of which should have our serious concern, and should have also the benefit of extended national inquiry and scientific investigation."

THE ORIGIN OF ONYX

When waters charged with carbonate of calcium derived from limestone are allowed to evaporate they deposit their load in the form of sinter or tufa. This process can be observed at many thermal and "petrifying" springs and also in the formation of stalactites and stalagmites in limestone caverns. In this way large masses of compact carbonate are formed, some of them of great beauty. The so-called "onyx marbles," of which the Mexican "onyx" is a familiar example, are formed in this way. Some rock of this class is stalagmitic, in caverns, and some of it is formed by springs. Its variations in color and texture, to which its ornamental character is largely due, are commonly produced by impurities or inclusions, such as oxide of iron, or even mud and clay.—U. S. Geological Survey Report.

ANNUAL REPORT OF BUREAU OF MINES

SOME PERTINENT POINTS FROM LAST YEARLY STATEMENT

By DIRECTOR J. A. HOLMES

The annual report of Director Joseph A. Holmes, of the U. S. Bureau of Mines, made to the Secretary of the Interior for the fiscal year ending June 30, 1914, has much of value to all those connected in any way with or interested in Mines or Mining. The following are brief extracts:

The loss of life from the falls of roof and coal and from mine caves in the mines of the Country during the past five years has been more than 7,000 killed and more than 25,000 have been seriously injured.

From the lack of proper safety appliances in the mines of this country more than 3,500 men have been killed and nearly 20,000 have been seriously injured during the past five years.

Not only have many men been killed or injured from what are believed to be necessary electrical accidents in mining and other branches of the mineral industry, but indirectly electrical apparatus has been responsible for mine explosions and mine fires that have extensively destroyed both life and property.

The improper use of explosives and the use of improper explosives have directly or indirectly caused a large share of the fatal accidents and serious injuries to the men working in the mining, quarrying, and tunneling operations of the country. But fully as serious as the killing and injuring of several thousand men from this cause during the past five years has been the injury to the health of the miners from the poisonous gases given off by the improper explosives used.

In the metallurgy of iron and steel alone there are more than 150,000 men employed; 30,000 to 35,000 persons are injured and a considerable number are killed during each year. In all those branches of the mining industry that

are conducted above ground there are 1,300,000 employes, and not less than 100,000 persons are injured and a considerable number killed each year.

It is a reasonable estimate that the present waste, in large measure unnecessary, of mineral resources amounts to a national loss of not less than \$1,000,000 a day.

In one respect, at least, the consideration of mineral waste has a basis quite different from the consideration of agriculture wastes. Our crops represent an annual production from a reasonably permanent soil; our forests may grow again though a much longer period of time is required; and the soils themselves may be reproduced from the subsoil and the rock beneath. But of our mineral resources we have only the one supply. This supply is, to a considerable extent destroyed in use, and at the present increasing rate at which we are using and wasting it our one supply of a number of these resources will be either exhausted or largely depleted while the nation is yet in its youth.

The United States produces 63 per cent of the world's petroleum, and the capital invested in the industry in this country is nearly half a billion dollars.

Practical petroleum operators estimate the petroleum waste or losses in drilling, and the development of oil fields, in storage, and transportation, to be not less than \$50,000,000 per annum, and admit that a large part of this loss is preventable.

A careful estimate indicates that in the mining of 600,000,000 tons of coal during the last calendar year there was wasted or was left underground in unminable condition 300,000,000 tons of coal. As a result of a careful preliminary inquiry it is believed that more than one half (200,000,000 tons of coal) of

this yearly waste is preventable under existing economic conditions. But the bare statement of enormous losses does not, perhaps, express the most important part of the situation, which is that the coal we are now using and wasting represents the cream of our supplies, namely, the coal that is the best, is most cheaply and easily mined, and is nearest the great centers of industry.

No better illustration could be given of the contrast in the treatment of these two great national industries (Agriculture and Mining) than the fact that in spite of this lagging behind of the mining industry during this 10-year period the National Government expended for the reclamation of agriculture lands in these public land States not only all of the money received from the sale of public lands for agriculture purposes, but also nearly \$7,000,000 received from the sale of mineral lands in these States.

Agriculture is much the larger of the two industries; it embraces a large number of persons, more widely distributed, and each acting as an independent agent. Its products, supplying the country with food and clothing, bring this industry even closer to the lives of the people than does the mining industry, though the latter supplies them with the fuel that cooks their food, heats and lights their houses (which are built largely of mineral products), operates and supplies a large share of the materials and all of the machinery of their factories, conducts and operates largely their facilities for transportation and communication, and supplies more than 60 per cent of the total freight tonnage of the country. Indeed, the mining industry is in large measure the real basis of our modern civilization and national life.

Mineral products are becoming more and more indispensable to the domestic life of the people and to our manufactures, as well as being the basis of transportation facilities and of the products to be transported. Under normal conditions, as our mines become deeper and our mineral resources are depleted, not only the hazards of production but also the per capita cost of mineral products is increasing and one important purpose of the larger investigations proposed in

behalf of the mining industry is to find how the cost to each consumer may be kept down to a minimum.

The per capita consumption of coal in 1870 was less than 1 ton; in 1890 it had increased to $2\frac{1}{2}$ tons; and in 1913 it rose to more than 6 tons.

Our mines can produce only the one available supply; this one supply must meet the future as well as the present needs of the nation; and a century's experience has clearly shown that our use of the more important of these resources, such as mineral fuels, precious and other metals, and potash and phosphate deposits, will increase much more rapidly than will our population.

The National Government is expending yearly for agriculture \$27,970,000; for mining \$1,967,000.

The per capita contribution from the people of the United States for the advancement of these industries is agriculture twenty-eight cents, mining two cents.

Of this contribution the per capita expenditure for safeguarding the lives of 2,300,000 employes in the mining industry is about one-half of 1 cent per annum.

ARIZONA'S ALIEN LAW UNCONSTITUTIONAL

Arizona's alien law providing that at least 80 per cent of all paid workers where more than five persons are employed must be American citizens has been declared unconstitutional by the United States District Court. The decision was handed down at San Francisco by Federal Judges Morrow, Van Fleet and Sawtelle. Justice Sawtelle read the opinion.

Attorney General Wiley Jones gave notice of appeal to the U. S. Supreme Court.

Justice Sawtelle said: "The law conflicts with the 14th amendment of the Federal Constitution which gives equal protection of the law to all. The Arizona law discriminates in favor of American citizens. If it should be enforced, another law could as well be passed providing that the employer hire 100 per cent American citizens."

LATIN AMERICA AS AN EXPORT MARKET FOR COAL

BY ALFRED THOMAS MARKS

Latin America during the year ended June 30th, last, bought coal aggregating nearly \$96,000,000—one country alone, Argentine, spending \$25,373,000 for coal of various kinds from the United Kingdom, the United States and Germany.

These figures give a fair idea of the value of the market now practically opened to our United States coal exporters.

Until the outbreak of the European war the Latin American republics purchased of Great Britain over three-fourths of the coal they imported. Of the remaining scant one-fourth the United States supplied two-thirds and Germany one-third. According to this division of the business the United States stands a rather poor second to the United Kingdom's condition brought about as much by the lack of "push" on the part of our exporters as by the superior salesmanship and more energetic business methods of the English.

But now the South American coal situation bears an entirely new and different aspect. The war has curtailed the former sources of supply to such an extent that the market in every republic of South and Central America is thrown open to our exporters to sell nearly one hundred million dollars' worth of our coal, and to make of Latin America a permanent and ever-growing export field for American coal producers.

A glance at the coal situation in the respective countries will prove of much more than ordinary interest to our United States exporters who are in position to go into this market.

No coal is mined in Argentina. The importations of coal into that country in 1913 totaled 3,912,472 metric tons (of 2,204.6 pounds each). The principal countries or origin were England, which supplied 3,502,000 metric tons; United States, 117,951 tons, and Germany the balance. In the first six months of 1914

Argentina imported 2,097,087 tons. The importations of coke into Argentina in 1913 amounted to 21,317.45 tons, of which over two-thirds came from the United Kingdom, the balance being divided between this country and Germany.

The tremendous lead of English coal in this market will be noted from these statistics. Of the over \$28,000,000 spent in 1914 in foreign markets by Argentina for coal Great Britain got about \$22,000,000, leaving the balance to be divided between the United States and Germany.

The consumers of steam coal are the railroads, electric light plants, steamship lines and industrial concerns generally. The coal generally used is Cardiff coal, which has high volatile properties. In quantities of less than 500 tons Cardiff coal is sold at \$9.50 United States currency, delivered, and in larger quantities at a decreasing price, \$8 per ton being the minimum normal price of steam coal in this market. This will easily be appreciated as a just minimum when it is considered that charter freight on coal to Argentina is nominally from \$3.50 to \$4 United States currency per ton. As is well known, the British hold on the local market has been secured by the heavy British investments in railroads and public service corporations, by the dependable quality of the coal, and by the great movement in Argentina's ports of British-owned shipping which, while giving regular and rapid service on coal deliveries, also necessitates large coaling stations for general cargo and passenger steamers. It is also strengthened by the large British coal companies having ample deposits here for all general needs.

Several months ago, when the British embargo was placed on the exportation of coal from Great Britain, many orders were diverted to the United States.

At a rough estimate, based on the opinion of people in touch with the Ar-

gentina coal market, something over 100,000 tons of American coal have been sold in the last two and a half months for delivery in that country. In order that any settled business of good proportions be done in Argentina in American coal it is highly important that a coal deposit be established in order to gather in the relatively small consumers who, although using several shiploads of coal per year, will not finance their coal purchases as far ahead as would be necessary in purchasing coal from the United States with the subsequent risk of running short because of insufficient steamship service.

A manager of such a concern some time ago ordered and received American coal for his plant, and then through the difficulty of securing a carrier a shipment was held up for several months. He was forced to buy British coal from local deposits and was obliged to pay a heavy percentage of increase in price until he contracted to supply his plant with British coal.

The steam coal carrying service from England to the east coast of South America has been excellent, and the coal is well known. In order to compete successfully in this market American producers must take these facts into consideration and prepare to at least equal the service to which this country has been accustomed.

Practically all of the gas coal imported into Argentina comes from South Yorkshire, England. About 300,000 tons per year are used. The price, delivered, is \$7.25 per ton United States currency. The Compania Primitiva de Gas a few years ago experimented with Fairmont coal purchased from the Consolidated Coal Co., in the United States, and found it very satisfactory and up to grade. Trial shipments of another American coal however, fell below the South Yorkshire and Fairmont standard in producing value.

The British coal received here is all guaranteed double screened.

The ordinary method of unloading at the port of Buenos Aires is by means of baskets. The few docks that have mechanical apparatus do not use drop buckets or chain conveyers, but load

coal in the hold into iron buckets which are shifted by cranes. The unloading expense is figured at 25 to 30 cents United States currency per ton, and is borne by the shipper selling on a delivered price, unless otherwise stated in the contract.

Many of the large coal-consuming industries of Argentina have their head offices in London, and payments for shipments are effected there.

Brazil has large coal deposits, but the scarcity of labor has up to this time prevented mining operations, except on a very limited scale. Three-fourths of the coal used in Brazil is imported, the total bought in foreign countries for the year ended June 30, 1914, having been \$18,482,303, of which the United States supplied \$2,788,601 and the United Kingdom \$15,490,137. At this time Brazil offers a market only second to Argentina, and is for many reasons our best prospective export field in South America. The Brazilians have a more kindly feeling than the Argentines toward the United States and its products, the very evident prejudice existing in Argentina being almost entirely absent here.

In general, the conditions governing the buying of coal, methods of shipment and handling, prices, etc., are the same in Brazil as obtain in Argentina.

In regard to the effect of the use of oil on coal consumption in Chile, it should be noted that of the 71,000 tons of fuel oil imported in 1912, 69,990 tons came from Peru, estimated to be worth \$2,552,000, and but 1,200 tons from the United States, worth \$44,288. By the end of 1913 these positions had been reversed, and Peruvian oil imports had dropped to 20,190 tons while those from the United States had increased to 42,200 tons.

Importations of coal into Iquique, Chile, in 1912 were 334,500 tons, and in 1913 258,266 tons. About half the oficinas of the country are now using oil instead of coal, and as others change over and adopt it the decrease in coal imports will be still greater. It is only a matter of time when coal as fuel at oficinas will be entirely superseded.

Coal and charcoal import into Iquique in 1913 from the United Kingdom were valued at \$1,803,056; from Germany,

\$28,200; from all other countries, \$85,972—the total being \$1,917,228. Australian coal is today delivered in Chile ten per cent below the English and Welsh prices.

At the beginning of the European war coal prices went up nearly fifty per cent in three days, because of the report that the British government had requisitioned all the coal in Wales. As soon as it was seen that the coal on the way to this port would be more than sufficient for local needs, as the industries were shutting down, the prices soon went back to normal.

Nearly all the boats bringing coal here load nitrate. For this reason it is not possible for a boat bringing coal and departing in ballast to offer competitive freight rates. Countries now taking Chile's nitrate of soda may enjoy practically all the trade in coal if they supply it at reasonable prices.

The principal users of coal in Chile just at this time are the west coast steamers, which take on bunker coal here. They require more than the railway, oficinas, gas plant and domestic users combined.

The rules for unloading coal here are as follows: From sailing ships at least 80 tons per day must be received by the consignee, while 250 tons is the minimum to be received from steamers. Three times these amounts are handled on certain occasions, depending upon the facilities on board, the number of lighters available and other conditions.

For the year ended June 30, 1914, the entry of bituminous coal into the port of Cartagena, Colombia, totaled \$29,018. Of this amount the United States supplied \$26,378 and the United Kingdom \$2,640. Practically all the coal imported here is for the use of the Cartagena-Colombia Railway Co. As there are no wholesale or retail dealers in coal in this country the little coal used by the general public must be bought from the railway company, which retails it at \$20 per ton.

Payments for all coal bought in the United States by the railway company named are made in United States currency on presentation of the bills of lading to the company's fiscal agents in New York.

The consumption of steam coal in

British Guiana is chiefly by steamships, railways, tramways and electric lighting plant, the city pumping station and the ice plant. The total annual imports amount to about 28,748 long tons, valued at \$160,000. Of the 28,748 tons of coal imported, 10,088 tons were bituminous and 18,660 classified as "other kinds." The latter coal, however, was Welsh steam coal. A total of 11,925 tons was imported from the United States, and the balance chiefly from the United Kingdom. Bunker or steam coal is selling at present at \$6.75 to \$7.50 per ton delivered.

Uruguay presents a splendid market for American coal producers. At the beginning of the war in Europe the coal stocks in this country were sufficient only for the needs of some two months. There was general fear of a coal famine, and the price jumped to \$22 per ton. However, substantial curtailment of consumption by large coal users, such as the railroads, and special efforts to secure imports have kept the supply nearly up to the normal level, although the price is still above the usual figures, largely on account of the higher freight and insurance rates that have prevailed since the war began.

Several cargoes of American coal have arrived at Montevideo during the last two months, while others are expected. The German Coal Company here is in the market for some 100,000 tons of American coal (Pocahontas), and the Ministry of Public Works is ready to accept bids for some 5,000 tons of American coal of the same grade and quality.

American coal has had strong opposition in this market. Interested concerns of large influence have been active in fostering the impression that American coal is an article of very inferior quality. Actual tests have disproved these assertions, and American coal has come into greater favor. At present the steam capacity of American navy coal is rated by large consumers here as 95 per cent, or as low as 90 per cent, of that of Cardiff coal. But it is held by people supposed to be well informed that this apparent inferiority of American coal is due to faulty firing, and that American

coal, if fired by American firemen who know how to burn it to best advantage, is fully equal to the best Cardiff coal.

The largest coal companies here are English concerns, which naturally do not look with favor on American competition in the markets of the River Platte. The success of this competition, once England gets into condition to again meet the demands, will be dependent on the comparative freight rates from English and United States ports.

During the year ended June 30, 1914, there arrived at the port of Motivideo 542,000 tons of coal, of which about 180,000 tons were for the consumption of the country and the rest for coaling ocean steamers. In prosperous times the importation exceeds 800,000 tons. The tramways have contracts with English importing houses, as is also the case at present with the city power house. The principal railways of the country receive the fuel they need direct from the mines. Cardiff coal for industrial establishments is sold here, on annual contract, at \$8 and \$10 per ton.

During the last twelve months Venezuela imported coal to the amount of \$52,512, of which amount England secured \$37,500 and the balance was about equally divided between the United States and The Netherlands.

WEST VIRGINIA'S MINING POPULATION

West Virginia's Department of Mines reports the state's mining population of 78,041 to be made up of 49,458 Americans and 28,583 foreigners. Of those enumerated as Americans 36,101 are white and 13,357 colored. Of the foreigners born the Italians lead with 10,276. The Hungarians come next with 4,761. Of Poles, there were 3,136, Slavs, 2,229; Russians, 1,737; Austrians, 1,472, and Germans, Greeks and English number 577, 571, and 557 respectively. Roumanians total 510. Twenty of the nationalities are represented including Turks, 45; Syrians, 115; and one lone Jew.

The four counties of McDowell, Fayette, Mercer and Raleigh, in which the Smokeless Fields are located, have a mining population of 38,279, or nearly half of the entire mining population of the state. McDowell leads with 16,558; Fayette with 12,651; Raleigh with 5,644; and Mercer with 3,426. Other counties with large mining populations are Kanawha, with a total of 7,460; Harrison, with 5,288; Marion, with 5,702, and Logan, with 4,820. The remaining 16,492 of the mining population are divided among the counties of Tucker, Barbour, Boone, Braxton, Brooke, Clay, Gilmer, Grant, Greenbrier, Lewis, Lincoln, Marshall, Mason, Mineral, Mingo, Monongalia, Nicholas, Ohio, Preston, Putnam, Randolph, Taylor, Upshur, Wyoming and Wayne.

WEST VIRGINIA'S MINE FATALITIES

Fatalities in the coal mines of West Virginia during 1914 number 555. Of this number 183 deaths resulted from the explosion at Eccles in April. In 1913 the death loss numbered 335. Of the total, not including those killed at Eccles, the greatest number of fatalities were caused by falls of roofs of coal. The death rate including those killed in the Eccles disaster, was seven for each 1,000.

AMERICAN INSTITUTE OF MINING ENGINEERS' MEETING

The American Institute of Mining Engineers will hold its annual meeting in New York city, February 15-18, inclusive. The sessions will be held in the Engineering Societies' Building. The meetings will begin at 2 p. m. on February 15. The annual business meeting will be held at 10 a. m., February 16, and at 7 p. m., February 16, the annual dinner will be given at the Hotel Astor. Meetings of club alumni will be held. A number of New York clubs have extended their privileges to the visiting members.

MINING IN PENNSYLVANIA

Governor John K. Tener, of Pennsylvania, had something to say in his annual and concluding message to the General Assembly of his State that bears importantly on the coal-mining and coke-making industries. It is worth while for our readers to know what the Governor said and recommended, because he said it as representative of the public opinion of the greatest coal-producing territory in the world, and more particularly of the United States. Pennsylvania, the first State in which the coal mining industry was developed, has ever lead in quantity of output, and this fact has given her a lead, through necessity, in legislation applying to coal mining. It is declared that the laws governing coal mining in Pennsylvania are ahead of any other self-governing community in the world, and embrace, in their contemplation, the latest features of mining science.

CONSERVATION

In his annual message to the legislature, which was also a review of his four years' administration, Governor Tener said, in part:

Pennsylvania ranks first in the production of coal, coke, iron and steel, cement, glass and leather, railroad cars and some manufactured articles. To long maintain supremacy in these lines our natural resources must be conserved.

In no way is the waste of natural resources better illustrated than by coke manufacture in bee-hive ovens. Pennsylvania, in the year 1912, had 43,347 active bee-hive ovens, which produced 587 short tons of coke per oven. For every 100 tons of bituminous coal used these ovens produced only 66 tons of coke. They destroyed 34 tons of every 100 tons. On the other hand, by-product ovens yield 73.8 tons of coke from 100 tons of coal; and they do more. They produce gas, tar and ammonia as by-products. In the year 1912 the 1,442 by-product ovens in Pennsylvania produced 1,369 tons of coke per oven. Moreover these 1,442 ovens produced approximately \$2,300,000 worth of by-products in addition to 1,974,619 short tons of coke. The value of by-products was about four-tenths of the value of the by-product coke. If the coke made in bee-hive ovens in the year 1912 had been made in by-product ovens 4,077,765 tons of coal and about \$37,500,000 of by-products would have been saved.

WORKMEN'S COMPENSATION

Regarding a compensation law, for the enactment of which a majority of the members of both houses of the legislature are pledged to vote, Governor Tener states:

It is important in every civilized community, but of peculiar importance in Pennsylvania, because of the pre-eminent position of our State in the industrial work of the world.

I strongly urge the enactment of a workmen's compensation bill, and related bills included in the report of the Labor Commission without delay.

I emphatically urge the prompt enactment of this legislation. One half of the states of the Union now have laws of this kind upon their statute books; and in my opinion Pennsylvania, the greatest industrial State of them all, should no longer hesitate, more particularly as every State surrounding and contiguous to Pennsylvania, with the exception of Delaware, has acted favorably upon this important subject. The General Assembly, having the experience of 24 states to draw from, is in a position to pass a bill that will be acceptable to employer and employee alike.

Pennsylvania is the greatest coal-producing territory in the world; producing in 1913 264,592,623 tons. The State has enacted comprehensive legislation for the protection of those employed in this industry. These laws are rigidly enforced, and violators of their provisions and promptly punished. The bituminous mining code, enacted at the session of 1911, has proved its worth in conserving the health of employes and by reducing the number of accidents in and about mines. The number of inspectors in the bituminous region has been increased to 28, and in the anthracite region to 21.

In order that the greatest possible safety may be thrown about mining operations, the department has recommended the establishment of first-aid corps and rescue corps at the various mines. The primary object of the first-aid and rescue work is to render quick service in time of emergency, and the effectiveness of the work has frequently been demonstrated. In the anthracite region there are now approximately 500 first-aid teams, comprising 3,000 men, and the number instructed in the work to the present time is about 6,000. The number of rescue corps is over 100, comprising more than 700 men, and in this work about 3,000 men have received instructions. In the bituminous region there are more than 400 first-aid teams, comprising 2,000 men, and the number instructed in the work at the present time is about 3,000. The number of rescue corps is

about 60, comprising 300 men, and in this work about 700 men have received instruction.

In all the mining districts encouragement is given to the various methods of education, such as night schools, mining institutes and vocational schools

THE STATE CONSTABULARY

In Pennsylvania the labor unions have denounced the State Constabulary, and it is interesting to have some facts and figures as to what the value of this body of State police has been to the Commonwealth. Governor Tener says of this body:

The Department of State Police, created in 1905, consisting of four troops of two officers and 55 men each * * * has rendered valuable service to the commonwealth.

In the eight years ending December 31, 1913, the members of this force covered 3,367,198 miles and made over 45,000 arrests. During this time the department received thousands of requests for assistance from all parts of the State.

Four thousand one hundred forty-six requests were received last year from district attorneys, sheriffs, judges, chiefs of police, etc. Less than 25 per cent of these requests could be complied with, owing to the limited number of men on the force. Among the arrests made from January, 1906 to January, 1914, were: Three hundred and sixty nine for murder; 102 for highway robbery; 441 for gambling; 371 for burglary; 57 for horse stealing; 774 for violations of fish and game laws; 121 for keeping immoral houses; 145 for rape; 227 for robbery; 490 for violation of the liquor laws; 125 for receiving stolen goods.

Only a small percentage of these arrests could have been made by the local authorities, as practically all of them were for crimes committed in small towns or in rural districts where they have no adequate police protection.

The necessity for an increase in the number of men and an adequate appropriation to distribute them to the best advantage throughout the state is proven by the thousands of requests for assistance that are received yearly from state and county officials, with the majority of which the department is unable to comply.

BRITAIN'S COAL EXPORTS DECREASE.

Among the innumerable effects of the war abroad is the falling off in the coal exports of Great Britain. In November, 1914, 3,280,160 tons were exported, against 5,913,404 tons in November, 1913 and 6,197,445 in the corresponding month of 1912.

PENNSYLVANIA LEADS

The total value of Pennsylvania's mineral production, according to the Geological Survey in its recently issued volume on mineral production, is more than one-fourth of the entire country.

The production of coal in 1912 amounted to 246,227,086 short tons, valued at \$34,993,123, of which 84,361,598 tons were anthracite and 161,865,488 bituminous. In 1913 the production of anthracite increased to 91,524,922 tons and that of bituminous to 173,781,217 tons. The combined value of coal produced in Pennsylvania in 1913 was \$338,220,933, an increase of \$41,227,810, or 12 per cent over 1912.

Second in importance among the State's mineral industries is the manufacture of Portland cement, the total production of which in 1913 was 28,060,495 barrels, valued at \$24,268,800, against 27,539,076 barrels valued at \$18,918,165 in 1912.

Pennsylvania ranks second among States in the total value of clay products, which increased from \$18,539,873 in 1912 to \$21,695,845 in 1913.

The Keystone State is second in the production of natural gas, the value of which increased from \$18,539,873 in 1912 to \$21,695,845 in 1913.

In the petroleum production, which was 7,963,282 barrels in 1913, an increase of more than 50 per cent in value from \$12,860,752 to \$19,805,452, the State ranks fifth.

In 1913 Pennsylvania produced \$3,733,581 worth of slate.

CANTON TO STAGE FIRST AID

Canton, Ill., expects to do herself proud in April with a big first-aid contest which promises to eclipse anything of the kind ever held in the state. The meeting for the purpose of organizing a county first aid association was scheduled for January 16. All first aid men in the county were invited. There is much enthusiasm and there is every expectation of a most successful meet, with a large attendance of miners and operators.

RECENT LEGISLATION AFFECTING THE ARIZONA MINING INDUSTRY

BY WALTER DOUGLAS, BISBEE, ARIZONA

Address Before the Seventeenth Annual Session of the American Mining Congress, Phoenix, Arizona, Dec. 7-11, 1914.

When the territory of Arizona achieved its ambition and was admitted into the sisterhood of States, its legislators sitting as members of its constitutional convention felt it incumbent upon them to evolve a constitution which would be in nowise secondary in progressive principles to that adopted by its predecessor, Oklahoma.

To this end the XVIIIth Article concerning labor deals with certain features of the social legislation which are ordinarily left to legislatures to enact.

Section I of Article XVIII directs the legislature to enact a law providing that eight hours and no more shall constitute a day's work in all employment of the State or any subdivision thereof.

Section II—that no child under the age of fourteen shall be employed in any gainful occupation, nor shall any child under sixteen be employed in mines or other hazardous occupation.

Section III declares it unlawful for an employer to contract with an employe whereby he shall be released from responsibility for any injuries sustained.

Section IV abrogates the common law doctrine of fellow servant, while

Section V leaves the defence of contributory negligence, or of assumption of risk to the jury as a question of fact.

Section VI provides that the right of action to recover damages shall never be abrogated and the amount recovered shall never be subject to any statutory limitation.

Section VII directs the legislature to enact an Employer's Liability law by which the employer shall be liable for death, or injury, to an employe due to the hazard of the employment.

Section VIII provides that the legislature shall enact a Workman's Compul-

sory Compensation law, but specifically states that it shall be optional with the employe to accept the compensation or retain the right to sue.

Section IX prohibits the exchange, solicitation or giving out of a "Black-List," and

Section X—That none but a citizen of the United States shall be employed upon public works.

Article XIX establishes the office of Mine Inspector, and directs the first legislature to enact laws regulating the operation and equipment of the mines of the State.

The first legislature of the State of Arizona convened on the 18th day of March, 1912, and proceeded to carry out the instructions embodied in the Constitution and to enact of their own volition other measures affecting the mining industry.

Considering the different laws that have been enacted in their relative importance and after two years' experience of their operation it would be proper to ascribe the first place to the Mine Inspection Bill.

It has been singularly fortunate for the State of Arizona that some time prior to the convening of its first legislature, the American Mining Congress had appointed a committee of distinguished members to compile a code applicable to the conditions obtaining in metal mines and that the rough draft of its report was available for the legislature when confronted with the necessity of framing a law as directed by the Constitution.

With a few minor and one major exception the code drafted by your Committee was adopted and became the present law under which mines are operated in this State. It is a pleasure to be able

to say that State inspection instead of being detrimental, or an embarrassment, in operating, has become a positive benefit in that it has kept the management in close touch with underground conditions through the State Inspector and has assisted those in direct charge by association with an outside point of view. Perhaps part of the success has been largely due to the ability, tact and helpfulness of the mine inspector, who has converted prejudice and suspicion into hearty cooperation.

Next in importance to the mine inspection is the Compulsory Compensation Act. The first legislature found itself in the extremely embarrassing position of having to frame a measure of compulsory compensation which, under the wording of the Constitution, could only be optional. They doubtless did the best they could under the very difficult circumstances, but the result has been eminently unsatisfactory to all parties concerned. Any law which leaves the question of compensation for death, or injury, to the financial soundness of the individual employer is bound to be a hardship on the employe, as only responsible corporations are in a position to meet a heavy loss through an accident. The miner who goes out to do assessment work on one of the thousands of prospects, owned by parties of small means, meeting with an injury can obtain no relief. It is estimated that not more than forty per cent of the labor employed in the State would, under this defective law, be able to collect damages for injuries, or death.

I think it is a fair assumption that the great majority of the employers of labor today recognize the justness of the axiom that the industry should bear the burden of its hazards; but it is only fair that the financial degree of responsibility should be defined and understood by both parties. A law which binds one party and not the other is in its very essence unfair and intolerable and can only be a fertile source of misunderstanding and distrust.

Until the Constitution of the State has been amended, making it possible to introduce a system of State Insurance, such as that so successfully operating in

the State of Washington, or a compulsory compensation bill like those of New York or Massachusetts, the moneys which in the ordinary course of events would go to alleviating the suffering of the injured will serve to render the Ambulance Chaser prosperous and contented.

Perhaps the most pernicious law passed by the last legislature and especially aimed at the mining industry was the so-called Eight-Hour Law, which provides that an employe shall not remain underground for a longer period than eight hours in any twenty-four. This, in the experience of the large mines of the State, means that deducting the necessary time to get to and return from the working place and half an hour for lunch the miner only averages seven hours work. It is inconceivable that the framers of this measure could have believed that it would inure to the benefit of the best interests of labor. It is of that class of legislation which endeavors to throttle ambition and efficiency, to make all men of the same degree of mediocrity and to prevent ability and industry asserting itself. In the past, and before the passage of this law, the miner or mechanic of ambition was glad to get a few hours extra work as overtime each week not only for the additional money there was in it, but in order to acquire experience in a class of labor which was impossible during hours of regular operation. The result of the passage of this law has been that the average wage of the employe has been curtailed and, what is more important, his opportunity for advancement has been materially reduced. As a commentary on legislation of this class directed at a single important industry it might be proper to mention that of the fifty-four members of the first legislature but seven of them could be by the most liberal construction classed as representatives of mining or had any practical knowledge of the industry.

It would be improper in this brief review of recent legislation as applying to the mining industry to dwell at length on the law enacted by the first State Legislature for The Taxation of Mines, as

this subject will be fully discussed at the meetings of the Congress.

In conclusion, therefore, it is a fair assumption, which is borne out by actual experience, that ill-digested legislation such as that above cited has not been of financial or moral benefit to the wage earner but has served to embarrass an industry on the material prosperity of which this State to a large extent depends. Emphasizing this, the contrast between the carefully considered "Mine Inspection Law" and the hastily framed and illogical Compulsory Compensation and Eight-Hour Laws is striking. A prolonged period of great depression faces the copper producers and only mutual cooperation and wisely considered measures can succeed in preventing great suffering in the mining communities through further restriction in the copper output.

MANGANESE ORES

Although the United States is the world's leading steel producer, this country's production of manganese ore, which is used in the production, is less than the amount imported.

The spiegeleisen and ferro-manganese made from domestic ore last year was 110,000 tons, 120,000 tons being made from imported ores. Of the total of 230,000 tons, 110,000 represented spiegeleisen, and 120,000 tons ferro-manganese. For her production of these alloys we are therefore largely dependent on imported ore. The sources of supply last year were as follows:

	Tons.
British India	141,587
Russia	124,337
Brazil	70,200
Germany	2,014
France	1,114

Our production of high-grade manganese ore is mainly from Virginia. A low-grade manganiferous iron ore is mined in the Lake Superior region, but that scarcely comes into consideration in the question of ferro-manganese production, as is also the case with the manganiferous iron ores of Arkansas and

Virginia, which are chiefly used in the manufacture of high-manganese pig-iron.

COLORADO COMMITTEE AT WORK

The Legislative Committee of the Colorado Chapter of the American Mining Congress, in cooperation with the Legislative Committee of the Colorado Metal Mining Association has been at work on several measures to go before Colorado's law-making body. The two committees have agreed on mechanics' lien and new taxation measures. They are also framing a workmen's compensation bill.

The members of the Colorado Metal Mining Association committee are: John Ewing, D. W. Strickland, Harry Robinson, Jacob Filius, State Senator Curran and Warren Page. The personnel of the committee of the Colorado Chapter of the American Mining Congress is: Geo. E. Collins, D. L. Webb and Samuel D. Nicholson. W. G. Swart, president of the Colorado Chapter, has been co-operating with the joint committee.

A COURSE FOR PROSPECTORS

The Colorado School of Mines at Golden has added to its curriculum a three weeks' course for prospectors, the course to begin February 8. The work will include lectures and laboratory studies, simple methods for the detection of minerals in the field and consideration of geological formation. The course is open to prospectors and all others interested in learning more concerning mineral areas. There will be no fees other than a nominal charge to cover cost of supplies and materials used, which cost is expected not to exceed \$3.

A short course in coal mining organized for the benefit of coal mine employes will begin April 1 and end April 29. The course will be practically the same as that of last year, and will include mining, chemistry, mathematics, mechanics, geology and drawing. This course will be free also, except for the cost of materials used, and textbooks, all of which are not expected to exceed \$5.

THE FIRST MOVE

By W. G. SWART, DENVER, COLO.

Excerpts from Address Delivered Before the Seventeenth Annual Convention of the American Mining Congress, Phoenix, Arizona, Dec. 7-11, 1914.

We have recently been hearing that something is wrong with the mining industry; that the mineral output does not keep pace with the demand; that the good mines are rapidly being worked out; that prospecting is a "lost art;" that engineers will not recommend prospects; that money for development is not to be had, and that only developed properties can be marketed.

I am not going to say these assertions are wholly false, because the statement which opens this discussion is true—there does seem to be something wrong with the mining industry—but I do not believe the other statements will bear the light of careful investigation. The mineral output does keep pace with the demand. Metal prices and statistics prove it directly, beyond question, except in the case of gold, and since the price of gold must be measured indirectly we can only say that it seems also to be true of gold. It certainly is not true that all the good mines are worked out, neither is it true that prospecting is a "lost art," that engineers will not recommend prospects, that development money cannot be had, nor that only developed properties can be marketed. Any or all of these things may be true in individual cases, but in the aggregate the situation seems better than ever before. We are simply facing changed conditions and the old order is passing.

Mining must undoubtedly depend ultimately on prospecting, and like every other activity prospecting has had to change its methods. The man Arizona knows as the "desert rat" with his little grubstake and his burro was in his day the efficient prospector, but his burro cannot now compete with the automobile nor can he himself compete with the younger and more energetic men who drive the machines. They are the real modern prospectors, and if you will stop

a moment and consider you will be forced to admit both the increasing number of such men, and their influence on results. Some of these men are trained engineers, but many are not, and the statement that engineers will not recommend prospects almost answers itself—it makes little difference, so long as a body of active and intelligent young men is constantly discovering prospects and turning prospects into mines. It is also plain enough that someone is furnishing the money for this work. This leaves partially open only the statement that none but developed properties can be sold. Arizona again furnishes an answer. It is not necessary to go beyond her borders to show that some of the largest and best properties in the world have been bought, developed, equipped and put into operation within the past ten years. Does anyone question the willingness of the men who did this to repeat their success, or the willingness of others to emulate them?

The real point to be noted and emphasized here is that these are the large things, the spectacular things, the unusual things, the things requiring enormous capital. They are not the things requiring discussion here. We may take it as a firmly established fact that the really big things will continue to be handled by the really big men with their big resources. But the prosperity and stability of the mining industry depends, in the last analysis, just as much on the smaller enterprises, and it is with these that most of the complaints seem to originate. Is there a chance for the smaller mining operation? Can it be made attractive, secure and profitable?

Let us consider for a moment the distinction between prospecting and developing. There seems to be a very general impression that the lucky prospector finds a mine ready made. What he usually

finds is a "Prospect," which is simply the surface indication of possible ore beneath. It generally takes both time and money in liberal amount to ascertain even its chance of possible value, and this is called developing. Developing is the department of mining where the greatest risks must be taken, and where, incidentally, the greatest rewards may be expected. It is distinct from prospecting, and is even more important but the distinction is not well understood by the public at large. Mining is much more apt to suffer from lack of development than from lack of prospecting. Development funds come from a variety of sources, not necessary to enumerate here. They may, however, be separated into two general kinds—pure speculation and distributed risk. Unquestionably the larger part of development money has gone into the ground as pure speculation whether its owners knew it or not, and like most other speculations the proportion of losses have been exceedingly high. The distributed risk money has done far better but has not been so widely applied to smaller operations.

We all know that mining is made a solid, substantial and profitable business by the larger organizations. The very best talent is employed and the utmost care used in the selection and management of property. As many selected risks are assumed as can be obtained on suitable terms up to the financial limit of the organization. This is the distributed risk plan at its best, and few such concerns have ever failed from legitimate causes.

For a number of years the feeling has been growing among men qualified to judge that similar methods might be applied to smaller operations. The idea of local mining or exploration syndicates is not new—they have operated for years with a fair percentage of success. A syndicate of Colorado lawyers under good technical advice took several million dollars out of Creede and Cripple Creek. A syndicate of school teachers in another state paying into a working fund from five to twenty dollars a month each, made over two hundred thousand dollars in five years. It is easy to multiply such illustrations but we should also not for-

get that there have been many failures—far too many—arising both from general and local causes. It will occur to your minds immediately that the success of one such organization in a community ought to cause others to spring up with similar aims and hopes. It does; but the possibilities are usually seen and grasped first by the irresponsible promoter, and in the excitement of the public mind the real merit of the plan and the real reasons for its success are lost sight of with much unnecessary loss.

I believe the first move is a very definite move which must be systematically made in each community by those best qualified to make it, and they are the trained mining engineers and operators. I do not mean necessarily the graduates of mining schools, but just what is said—the trained mining men. They must do what they have not consistently done in the past—take the initiative and assume the leadership that is properly theirs. They must direct mining investment instead of only advise concerning it.

The one necessary thing is to guide and systematize local activity and it can be done properly only by the trained men. They must first show confidence in themselves, then build up the confidence of the community in their ability, integrity and unselfishness, and the rest is easy.

ALASKA'S MINERAL OUTPUT

Alaska's total mineral output for 1914 is estimated by Dr. Alfred H. Brooks, of the United States Geological Survey, at \$19,248,000 as compared with \$19,416,000 for 1913. The slight falling off in the figures for 1914 is due practically to the lower prices for copper. But for this fact the last year would have shown increased returns instead of a decrease.

During the thirty-four years of mining in Alaska—since 1880—according to the figures of Dr. Brooks, the territory has yielded mineral wealth valued at \$268,000,000. Of this \$244,300,000 has been in gold, \$19,800,000 in copper, \$2,251,000 in silver and \$373,000 in coal. Other mineral products include tin, lead, quicksilver. Petroleum, marble and gypsum figure in the returns.

THE PROPER ADVERTISING OF MINING OPPORTUNITIES

BY DR. JAMES E. TALMAGE, SALT LAKE CITY.

Excerpts from Address Delivered Before the Seventeenth Annual Session of the American Mining Congress, Phoenix, Arizona, December 9, 1914.

We live in an advertising age, and mining, like every other systematized activity, is concerned in the modern art and practice of public exploitation. It is of record that the earliest printed periodical, devoted to the dissemination of news, was issued in the year 1622; but not until another quarter of a century had sped its way, that is to say in 1647, did the first newspaper advertisement appear.

Well developed, productive, and paying mines are not advertised as a rule, by any of the methods specified. There is a very natural tendency to keep a really good thing in mining properties among the few who were fortunate enough to acquire holdings while the stock was cheap; and who have had the ability and good sense to retain the same. Prospects of undemonstrated and uncertain value are made subjects for widespread advertisements, usually, as stated, by the circularizing method, and many are they who are caught thereby, more frequently to their sorrow than joy.

The real prospector, he of the pick, shovel and pack-mule, is no party to the advertising scheme; when the mails begin to be burdened with printed matter respecting his find, it is a sure indication that the property has ceased to be his, and has passed into the possession of an entirely different species of prospector, who probably could with difficulty distinguish the pick from the shovel or the burro from its pack; and whose place of work is not the hole in the ground but the well furnished office; whose chief assistant is no hardy miner but a pretty stenographer; and whose pay-streak is the inherent weakness of human nature.

The element of chance, which enters so largely into all mining operations, the ever alluring possibility of a "get-rich-

quick" opportunity, lead many to seize the glittering bait offered through the circular advertisement, though they have not experience, knowledge, or judgment enough to see whether the bait is flesh, fish, or fowl, or only a glittering spoon-bait with the hooks in plain sight.

The safe and reasonable way is to regard every circularized mining proposition with caution if not with suspicion. The standing of reliable companies is or should be set forth in the official reports of the president and directors; and the would-be investor, if prudent, may ascertain from such reports and by personal inquiry the merits of the mine.

If mining properties are to be advertised at all, public sentiment and if necessary legislation should be invoked to denounce and punish dishonest promoters who seek to entrap the unwary and unwise, by presenting possibilities as certainties. No one knows better than the really practical miner, the competent mining engineer, and the experienced mining geologist, how much there is about mining that we do not know; nor do any realize better than these that we *have* learned some things about mineral occurrences, and that we *can* speak with relative certainty on many matters relating to ore deposits and the reliable indications thereof. In any advertising of mining property the promoters ought to be compelled to state only the facts such as a skilled and trustworthy examiner would attest, and to make clear the risk involved in the enterprise.

It is true that many of the promised advantages associated with circularized mining properties are so plainly exaggerations and misrepresentations that the duped victims thereof are deserving of little sympathy. Admitting this without question we are still confronted by the facts that such glaring misrepresenta-

tions are essentially criminal, and that the mining profession and industry is the ultimate sufferer therefrom. The spirit of American law is unquestionably set against wilful deception and fraud, however great the ignorance and guilelessness of the thoughtless victims.

It is a practical certainty that much of the misrepresentation embodied in promoters' advertisements is chargeable, in part at least, to the optimistic reports made by incompetent or dishonest examiners, many of whom profess a standing among "mining experts" though lacking practical experience as miners and technical training as mining engineers or geologists. If advertisers be required, either through stress of public opinion or by legislative provision, to support their promises and claims by the authority of competent men who have examined and reported on the properties offered to the public, there should be a strong and effective proscription against untrained and unreliable men posing under the objectionable but nevertheless current designation "mining experts." One of the great drawbacks to real progress in intelligent prospecting, and in the legitimate inducement of capital to further the enterprise, is the unreliability of the professional examiners of mining properties whose reports are made the basis of unwarranted and exaggerated claims. We all know that the honorable, high, and useful profession of the mining engineer and the mining geologist is infested by many parasites who stand to the competent mining men as the proverbial quack stands to the worthy physician.

It is needless to affirm that every proper advertisement of an opportunity in mining should be fair and honest, which is but another way of saying, truthful. If the mining property to be advertised offers a real opportunity for advantageous development and subsequent productiveness, this truth should be so set forth with the supporting evidence afforded by the report of competent examiners; but to proclaim a certainty where only a possibility exists is not only to speak but to commit a pernicious falsehood.

The most effective safeguard against the continuation of dishonest methods in advertising mining opportunities is that of professional and public opposition thereto. I consider it strictly within the legitimate activities of this Congress to set its seal of disapproval on the pretensions of untrained and unqualified men in all departments of the mining business, and to demand in no uncertain tones integrity and uprightness on the part of all who seek to promote and to advertise properties and opportunities offering gain in mining. Public opinion, encouraged and supported by the influence of this great organization, will be stronger than legislative enactment however radical or drastic. I do not recommend as essential to reformation in the matter of mine promotion the creation of new laws, either state or national, but the strict enforcement of existing statutes, and the spirit of the common law, which may perhaps with allowable variation be called the "common sense law," of right doing. It is impossible to advertise extensively except through the use of the United States mail; and existing laws directed against the illegal use of the mails are sufficiently comprehensive if only enforced. In the process of extensively circularizing any mining property good or bad, some intelligent mining men would be reached through the mails. If they find in the literature sent to them the elements of fraud, misrepresentation, and deceit, it should be considered by each of them a duty to report the matter to the postal authorities and place in official hands the evidence of the offense. We have already on record a few cases of conviction and punishment for criminal misrepresentation of facts in connection with mining properties in which the charge of illegal use of the mails was proved. These examples have had a wholesome effect and a persistent following up of this aggressive course cannot fail in time to reduce the criminal practice to a minimum. In the interests of legitimate mining let us be united in determined and aggressive oppositions against all species of untruthful advertising.

1914 SILVER PRODUCTION

The domestic production of silver again reached a high mark in 1914. The preliminary estimates of the United States Geological Survey and the Bureau of the Mint indicate an output of 67,929,700 fine ounces, valued at \$37,225,000, but the final figures may be somewhat lower. This was again one of the greatest outputs since the domestic production of silver began, according to H. D. McCaskey, of the United States Geological Survey. In 1912, 1913 and 1914 the highest record outputs of quantity have been made, but, owing to the varying yearly average prices for the metal, the value of the output has frequently in the last twenty-five years exceeded the value of any one recent year.

Increases in mine production of silver were notable in Idaho, California, and Arizona in 1914, and large decreases were recorded in Montana, Utah, Nevada, and Colorado.

Nevada retained first place in output of silver in 1914, but early figures from the mines indicate a decrease in production of over 800,000 ounces. The Tonopah, Nevada Hills, Nevada Wonder, Rochester, and other mines were active producers.

Idaho ranked second in silver production in 1914, with an increase in production of about 3,000,000 ounces, making a record for the State. The great lead-silver mines of the Cœur d'Alenes had a particularly productive year.

In Montana the silver output fell off more than 1,500,000 ounces, owing chiefly to the curtailed copper yield resulting mainly from the European war but also in part from labor conditions at Butte.

Utah ranked fourth in output, but the yield declined. The bulk of the silver produced was derived from silver-bearing lead ores of the Tintic district, but Park City, Bingham, and other districts contributed. The yield from copper ores of the smaller mines decreased with the curtailment of the copper yield.

Colorado ranked fifth in silver production, with a decrease of over 400,000

ounces, and Arizona ranked sixth, with an increase of about the same quantity, and a record output.

Low metal prices and disorganized markets in the later part of 1914 especially, and curtailment of copper output owing to the European war, made the year a difficult one for producers of silver. But for the increased yield of siliceous silver ores at Tonopah and in Arizona and the silver-lead-zinc ores especially at Butte and in the Cœur d'Alenes, the silver yield would have been greatly decreased; and but for the European war the domestic silver output would have broken all records in quantity of output, at least.

Demand for silver from India and China was disappointingly light in 1914, and London stocks accumulated resulting in a poor market. New York prices, reflecting these conditions, were generally low, especially in the later half of the year. For fine bar silver the price averaged 57.6 cents in January, 57.5 in February, 58 in March, 58.5 in April, and 58.1 in May. In June it dropped to 56.5, in July 54.7, in August to 54.3, in September to 53.3, in October to 50.7, and in November to 49.1. The average for December was about 49.4 cents and therefore the general average for the year was only about 54.8 cents, or the lowest since 1911.

The imports of silver in 1914 were valued at \$25,331,000, as estimated from the records of the Bureau of Domestic and Foreign Commerce. The exports were valued at \$50,500,000, or \$25,169,000 in excess of the imports. In 1913 the excess of exports over imports was \$26,908,812.

The imports of silver in 1914 were, as usual, chiefly in ore and bullion and mainly from Mexico, which supplied \$14,186,000 in silver, and Canada, which supplied \$5,657,000.

The total gold production for 1913 in the Philippine Islands was \$868,362, much the highest annual figures yet recorded. Practically all of it was exported.

GOLD PRODUCTION IN 1914

The gold mining industry of the United States had a prosperous year in 1914 and regained its normal condition, inasmuch as early returns indicate an output greater by nearly \$4,000,000 than that of 1913. Mr. H. D. McCaskey, of the United States Geological Survey, who is authority for these figures, adds that the production in 1913 was lower than for several years past and even in 1914 the output was considerably below that of any year in the period 1908-1912, when the high-water mark was reached. For 1914 the preliminary figures of the United States Geological Survey and the Bureau of the Mint indicate a total gold yield of \$92,823,500.

In Alaska the output of gold increased about \$300,000, the industry was generally prosperous, and a large amount of dead work continued to be done preparatory to increased output from lode mines. The placer yield was about \$10,700,000, or the same as in 1913, and increases made in the Ruby, Seward Peninsula, Iditarod, and Hot Springs districts offset declines in output from Fairbanks and other camps. Abundant rainfall favored placer mining. About twenty-six gold-lode mines produced about \$5,100,000 in 1914, against \$4,814,813 from thirty mines in 1913. Juneau, including the Treadwell and the great new Alaska-Juneau, Alaska-Gastineau, and other mines, continued to be the most important lode district.

In Arizona the mine production of gold increased about \$500,000 in 1914. The chief producers, the Tom Reed, Gold Road, Vulture and Commonwealth mines, were active and produced more than half the total yield, the remainder coming largely from copper ores.

In California the mines produced over \$700,000 more than in 1913. The Grass Valley, Mother Lode, and other quartz mines continued active producers at depth, and the placer output especially from the large dredging operations, was again large. The dredges alone produced forty per cent of the total gold

yield and over ninety per cent of the total placer output.

Colorado mines increased their yield by over \$1,500,000 above that of 1913, the greater part of this increase, or \$1,143,000, being made in the Cripple Creek district, where the mines and mills had another active year. Lake County (chiefly Leadville) made an important increase in gold output also, and smaller increases were made in Ouray and Dolores Counties of the San Juan region, and in Boulder, Chaffee, Clear Creek, Summit and Eagle Counties. The gold yield declined somewhat in San Juan, San Miguel and La Plata Counties, of the San Juan region and in Mineral County (Creede).

In Idaho the mine output decreased over \$250,000, owing largely to the small output of the De Lamar mine, but the dredges in Lemhi and Boise Counties had a prosperous year.

In Montana the mine yield increased over fourteen per cent and the total production was about \$4,000,000, or more than for any year since 1906. The placers and the Southern Cross and North Moccasin mines enjoyed an active year.

Nevada mines showed a decrease of about four per cent, or over \$400,000, in gold output in 1914. The yield at the great Goldfield camp alone declined by over \$1,000,000, but this decrease was offset by increased yield from Tonopah, Fairview, Wonder, Round Mountain, National, Seven Troughs, and other camps. At Manhattan the output declined about forty per cent.

In New Mexico the mine production increased nearly \$300,000, but in Oregon the output declined about \$20,000.

In South Dakota the mine output was normal. The great Homestake mines and mills were operated through the year, treating a slightly increased tonnage of slightly lower grade. The Golden Reward, Mogul, Trojan, Reliance, Wasp No. 2, and other mines and mills were generally active.

In Utah the mine output of gold decreased about seven per cent, or over \$250,000, in 1914. The yield was principally from copper ores. The output from true gold ores has declined since the suspension of operations at Mercur. The Philippine production had steadily increased and in 1914 passed the \$1,000,000 mark.

California again retains first rank in gold production in 1914, followed in order by Colorado, Alaska, Nevada and South Dakota, as in 1913. Arizona and Montana have both passed Utah, however, which dropped to eighth place in 1914. As stated in the Geological Survey Press Bulletin one year ago, increased output of gold on any large scale is hardly to be expected from any of the states from the present outlook, and unless the great low-grade deposits of the Juneau district, in Alaska, now being prepared for large yield, step into the breach or new discoveries are made elsewhere, the future domestic gold yield may show further decline from the high figures of recent years. Undoubtedly discoveries will be made, for much territory remains for the patient examination or reexamination by the indefatigable prospector, but the importance of such discoveries is necessarily beyond prophecy.

According to estimates from the records of the Bureau of Foreign and Domestic Commerce, the imports in 1914 comprised gold valued at \$58,122,000 and the exports were valued at \$242,711,000. The excess of exports over imports was therefore about \$184,589,000, against an excess of \$28,093,778 in 1913. The gold imported in 1914 was, as usual, in ore, bullion and coin; \$35,759,000 came from Canada and the remainder chiefly from Japan, Mexico and Ceneral and South America. The exports, which were of especial interest in 1914, were about \$113,513,000 to Canada, \$92,323,000 to France, and \$31,116,000 to England, and were mainly in United States coin and fine bars.

The output of the Rand mines for 1914 shows a falling off of 416,686 fine

ounces from the total production for 1913. The output for 1913 in fine ounces was 8,794,824 and that for 1914, 8,378,138. The showing for the last half of 1914 is the best, there being a considerable increase over the corresponding months of the preceding year.

FEDERAL ACCIDENT COMPENSATION

The U. S. Government during the past five years has paid \$1,803,923 to 14,046 of its employes on account of accidents met with in service. The money has been disbursed to the injured under the Federal Compensation Act of 1908. The act embraces approximately 95,000 persons, somewhat less than one-fourth of the civilian employes of the general government and carries artisans and laborers in manufacturing plants, arsenals, navy yards, river harbors and fortification work and all employes under the Isthmian Canal Commission, the Bureau of Mines, the Light House service and the Forestry service.

The total number of accidents reported was 42,290. Of this number 1,006 were fatal, about 10 per cent of which were in occupations not subject to compensation. Nearly one-half of the accidents and of the compensation paid refer to employes of the Panama Canal, who worked under conditions involving a high degree of hazard. The Navy Department ranked second in the amount of costs for compensation, the War Department third and the Interior Department fourth.

The rates on coal shipped to St. Louis from the Illinois bituminous field are the subject of a complaint filed with the Interstate Commerce Commission by the St. Louis Coal Operators' Traffic Bureau. One complaint is directed against the Baltimore and Ohio Railroad, and the charge is made that the tariff on coal shipped in small cars is higher than that on coal shipped in large cars. Complaint also has been filed against most of the railroads in the Illinois mining belt.

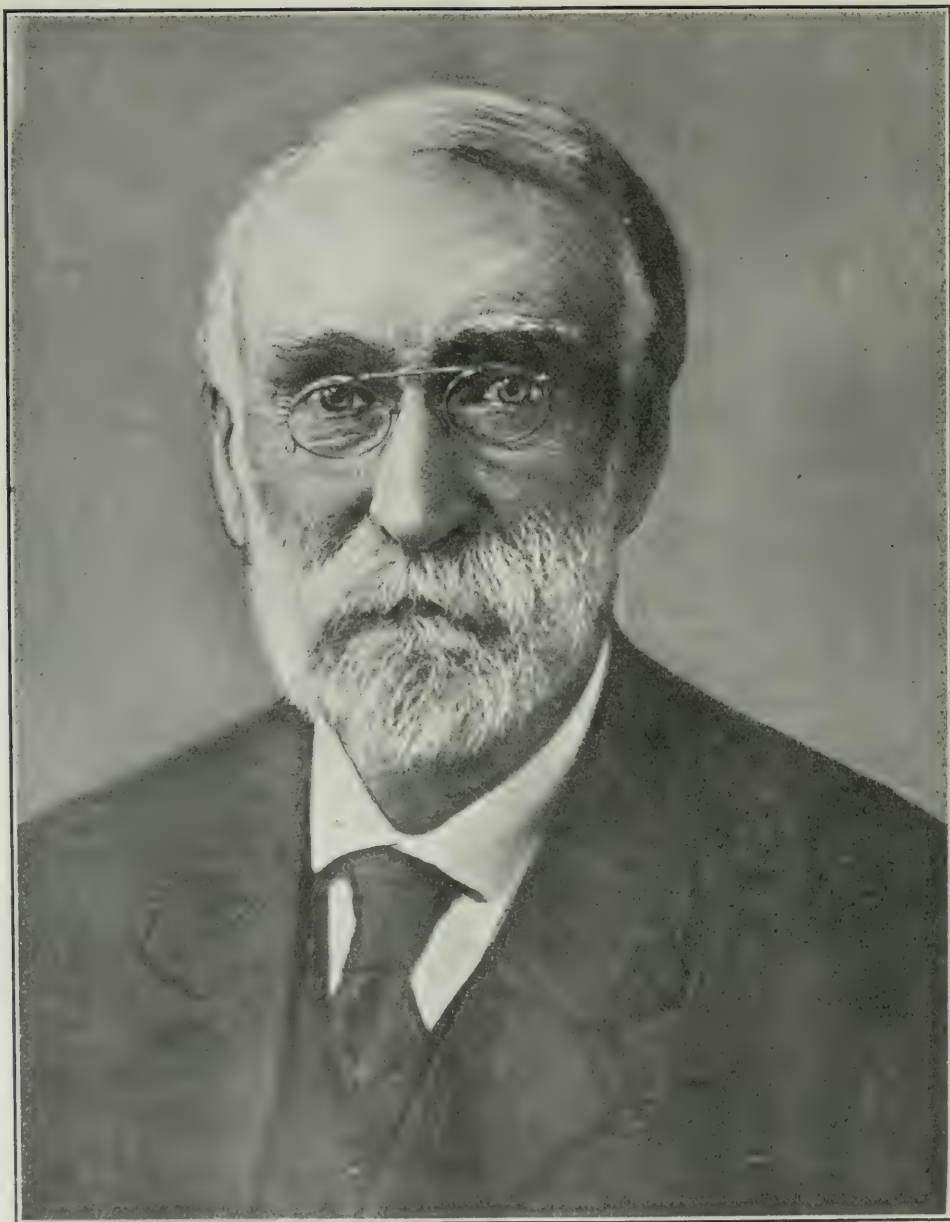
THE MINING CONGRESS JOURNAL

FEBRUARY

CONTENTS

1915

ARIZONA'S MINE TAX BILL PASSES SENATE	67
THE ARBITRATION OF INDUSTRIAL DISPUTES	67
MINING AS A BUSINESS	68
McALESTER MINE SAFETY STATION. (Illustrated)	69
BUREAU OF MINES APPROPRIATIONS.	69
THE FOSTER BILL	71
STATE AID TO MINING DEVELOPMENT.	72
CENTRAL WEST VIRGINIA COAL OPERATORS' ASSOCIATION.	73
DELAWARE PRODUCED IRON	73
THE EASTERN OHIO COAL MINING SITUATION	74
RADIUM AT THE CAPITAL. (Illustrated)	76
A NOVEL METHOD OF CONSERVATION	80
OREGON'S 1914 MINE YIELD	81
COLORADO MINES ACTIVE.	81
PLATINUM IMPORTS REDUCED	81
UNITED STATES TOTAL GOLD PRODUCTION	81
OKLAHOMA'S OIL CONSERVATION LAW	82
WORLD'S GOLD PRODUCTION	83
PROHIBITION BENEFITS MINERS	83
SAFETY FIRST. (Illustrated).	84
ENGINEERING CONGRESS	88
FOR POWER PLANT FIREMEN	88
ARIZONA AND THE MINING CONGRESS.	89
TUCSON SECTION OF THE AMERICAN MINING CONGRESS	91
MINING AT THE EXPOSITION. (Illustrated)	92
U. S. GEOLOGICAL SURVEY AT THE PANAMA-PACIFIC EXPOSITION	94
PENDING STATE LEGISLATION	95
SAFEST ELECTRIC RAILWAY.	99
WATER IN MINES	100
TESTIMONIAL TO DR. DOUGLAS.	100
THE ADJUSTMENT OF INDUSTRIAL DISPUTES AFFECTING THE PUBLIC SERVICE. Address by HON. JAMES A. EMERY, Washington, D. C.	101
UNITED MINE WORKERS	102
COMPULSORY ARBITRATION, Address by SAMUEL O. DUNN, Chicago, Ill.	103
CORRESPONDENCE FROM MEMBERS	109
OHIO MINE SCREEN LAW CONSTITUTIONAL	109
KANSAS STATUTE INVALID	110
MIDWEST OIL CASE DECISION.	111
NORTHWEST MINING CONVENTION AT SPOKANE	111
MONTANA'S METAL OUTPUT.	111
CRIPPLE CREEK'S FINE SHOWING.	111



DR. JAMES DOUGLAS
Honorary Member of the American Mining Congress

THE MINING CONGRESS JOURNAL

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The government of Ontario, Canada, is offering \$25,000 for the first discovery of radium in the province.

According to a bulletin recently issued by the California State Mining Bureau, there has been considerable activity in developing old gold mining properties, which have been idle. Some estimates of the amount of gold remaining buried in the ancient river channels run as high as \$1,000,000,000 dollars. It is regarded as certain that a great amount of gold can be profitably extracted by hydraulic methods.

ARIZONA'S MINE TAX BILL PASSES SENATE.

Arizona's mine taxation bill in substantially the original form as prepared by the Arizona Chapter of the American Mining Congress, has passed the State Senate and has gone to the House for action there. The vote stood 15 for to 4 against, the opposition vote exceeding by only one that of the committee which reported it to the Senate. The most important changes in the bill from its original form are an amendment providing for the assessment of producing mines idle over three months in any year at the valuation fixed by the previous year's assessment and one providing that where the average price of a product has been recorded the average price received by the producer for the ten-year period be used as a basis of the valuation of the property instead of the average selling price of the previous year.

The bill carries the emergency clause, making it operative immediately upon its passage which makes a two-thirds' vote necessary for its passage.

THE ARBITRATION OF INDUSTRIAL DISPUTES

He who attempts to settle disputes, no matter how equitable the settlement reached, is usually, if not always, the target of both sides of the controversy. It is therefore with hesitation and with a full expectation that its course will be criticised, that the MINING CONGRESS JOURNAL undertakes a discussion of the great subject, "The Arbitration of Industrial Disputes." It must be conceded from the beginning that the position of the laboring man today is better than it has ever been before in the world's history. We must also concede that organized labor has had much to do with bringing about this condition. Nor should we lose sight of the vast importance to industrial life and to the wage earner of the vast aggregations of capital which have made possible production upon an enormous scale and transportation facilities which distribute the earth's products to the remotest corners of the globe, making those things which were the luxuries of a hundred years ago the necessities of today. The large accumulations of capital which provide the facilities through which the luxuries of the world are practically made available to all and at all seasons are looked upon by some as a great menace to labor, while others believe this to be the necessary agency through which present day living is made preferable to that of one hundred years ago. If the enormous waste of time, energy and property caused by strikes could be added to the sum of wage earning and if the bitterness of strikes could be avoided surely the sum of human happiness would be greatly enhanced and the world

brought nearer to that greatly desired condition in which all shall work together for the common good.

This general question was discussed by the American Mining Congress at its Phoenix convention and a committee on arbitration, conciliation and mediation was provided, the committee being charged with the duty of fully investigating the whole situation and reporting at some future time its recommendations as to what can best be done. Of the papers presented at the Phoenix convention, one by Mr. Samuel O. Dunn, of Chicago, and one by Mr. James A. Emery, of Washington, D. C., are especially pertinent to this subject. They will be found elsewhere in this issue. Individuals in these days are not permitted to fight out their battles without becoming answerable to the criminal laws of the country. The courts are provided for the arbitration of all personal differences. Why should not the same rule apply to industrial disputes? It is easy to prescribe remedies but harder to gain common consent and approval. In a country of law and order, a country in which ultimate control rests with its citizens as expressed through the ballot box, it would seem that some satisfactory remedy might be found and if we hope to preserve representative government some better remedy must eventually be found.

The MINING CONGRESS JOURNAL opens its columns to a general discussion of this subject and invites contributions from both sides, asking only that these shall be concise, well tempered and prepared with a view of getting the contending factions together, rather than for the justification of the one or the condemnation of the other.

BETTER PRICES FOR ZINC

Better prices for zinc are here and are expected to continue for some considerable time. The closing down of the smelters of Belgium and Germany, which produced about one-half of the world's zinc supply, is responsible for the higher prices of zinc in this country.

MINING AS A BUSINESS

While it is generally believed that mining is more of a gamble than a business investment, the very reverse is true when investments are intelligently made and the risk so scattered as to secure a general average. The great mining corporations which make mining a business very seldom suffer a loss and their average is very handsome. Occasionally a failure is made, but whatever loss accrues is more than made up in other ventures in which they are successful. This being true as to the larger mining companies, there is no reason why with the same amount of intelligence and with the money handled by experienced men, men who understand the scientific conditions necessary to successful mining and who are also familiar with practical work, shall not, if sufficient capital is secured to carry on operations upon a large scale, make of the business a success equal to that which is now accomplished by the larger corporations. It is confidently asserted that the proper development of any twenty well-chosen prospects will result in the creation of one mine, the profits from which will more than offset the losses occasioned by the development of the nineteen prospects which failed to make mines. To develop any one of these prospects by itself is a very great gamble. To develop them all jointly makes the joint enterprise more safe and carries less risk than the average business investment.

No greater hazard could be imagined than the insurance of one man's life. Yet life insurance is considered a very safe business because it deals with the average of human lives rather than that of the individual. This rule applies with even greater force to mining. Even a life insurance company would fail if it paid too much in commissions for business, or made disastrous investments of its accumulated funds. Even the payment of excessive salaries might endanger its success. This illustration is given in order to show that metalliferous mining is a business which if honestly and intelligently managed is as safe as any other line of business and one which promises larger returns. If this is true,

then the agency which brings these mining opportunities to the investor has been a great benefactor to him. Upon the other hand, the development of large mining operations through which our western prospects may be developed, will be a great boon to the West, to say nothing of the benefits to commerce and industry which will follow the increased mineral production.

With proper protection to the investor, the now idle prospects in all of the western sections would be under development and all the money would be available to furnish employment for all the scientific, technical and engineering brains which is now available. The West has the opportunities and is greatly in need of capital for their development. The eastern sections are anxious for these opportunities but do not know how to find them. Is it not possible for the American Mining Congress to create agencies which will bring these interests together? A distinguished English economist once said "He who brings buyer and seller together in honest trade performs a service to both." The American Mining Congress, through the assistance of strong state chapters, hopes in this regard to render a distinct service to the West.

McALESTER MINE SAFETY STATION

In another column we present a view of the McAlester Oklahoma Bureau of Mines Safety Station, which was purchased by the Federal Government by the authority under H. R. 3988, enacted by the present session of Congress.

This station was first planned by the Oklahoma mine operators and a considerable amount of money was raised by individual subscriptions and the building erected and put in use. The cost of the building was considerably more than the local subscriptions and the foreclosure of the mortgage thereon threatened to divert it from the purpose for which it was intended. Inasmuch as its purpose was entirely of a general character a bill was introduced in Congress asking for an appropriation sufficiently large to pay the mortgage, which bill was en-

acted by the present session of Congress, making possible the continued use of this building for mine rescue work. Much credit is due Senator Swanson, of Virginia, and Congressman Carter, of Oklahoma, for bringing about the enactment of this legislation.

BUREAU OF MINES APPROPRIATIONS

The appropriations for the United States Bureau of Mines were discussed by the House of Representatives Friday, February 12, and passed as originally recommended by the appropriation committee, with the exception of the per diem traveling expenses of the United States Mine Inspector for Alaska. The Bureau practically obtains the same amount of money as the year before, which, in a way, is to the credit of the appropriation committee of Congress in view of the unusual conditions existing and the scarcity of Federal money.

The American Mining Congress had considerable to do with the creation of the Bureau of Mines and has watched with much interest its admirable work for the industry, under the efficient leadership of Dr. Joseph A. Holmes, the Director. It has also been amazed at the petty, quarrelsome attitude of certain members of Congress toward this bureau.

It has come to be expected that whenever the appropriations for the Bureau of Mines come before the house, that it will be attacked by two or three persons whose attitude toward the Bureau is known to be antagonistic.

The latest champion of this coterie of gentlemen against the Bureau of Mines is Representative Frederick H. Gillett of Massachusetts, a member of the appropriations committee. Mr. Gillett at the beginning of the hearings on the Bureau of Mines appropriations arose and presented for the attention of the members a copy of a postal card sent out by the Bureau of Mines calling the attention of interested persons to the publications being issued. Mr. Gillett had received from one of his constituents a copy of this card and he objected to the sending out of the card as "a specimen of the activity of the Bureau of Mines in ad-

vertising their wares and publications throughout the country to persons whom they think they might interest. Obviously they have a force of clerks who must be engaged in finding out the names of officials in different parts of the country engaged in business affected more or less remotely, and then they send out to them these cards, and then, I suppose, often replies come asking for the free bulletins, and then they come to us and tell us of the great demand there is for their papers and the great good they are doing to the public." He further said that this was a waste of money and that the publications were of no particular value to anyone outside of the big corporations and that the corporations knew better than the Bureau of Mines what was good for their industry.

Why Mr. Gillett should take it upon himself to bring this criticism against the Bureau of Mines, when it is a perfectly proper business procedure which is followed by every bureau of the Federal service issuing publications, it is difficult to surmise. The great Department of Agriculture has a mailing list of more than a million names and other bureaus have lists that run up into the hundreds of thousands, all of these designed to notify the interested public what the bureaus are doing, and the strange part of it all is that Mr. Gillett must know that every other bureau is doing this very same thing.

The facts are that the Bureau of Mines is a new bureau, with a live, active and hustling personnel, every member of which is endeavoring to do his best for the mining industry. In fact, certain other bureaus of the Federal service have taken lessons in the distribution of publications from the Bureau of Mines. It is not so many years ago when the Federal Government was expending millions of dollars for scientific investigations and burying the results in cellars or vaults where the publications rotted. The writer just the other day saw in a building occupied by a waste-paper dealer thousands of valuable Federal publications, some of them in their original wrappers, to be sold for waste paper at the rate of three cents a pound. These were bound copies that cost the Govern-

ment thousands of dollars. How they reached this place, the writer does not know. He was informed by the dealer that he purchased them from a person who sold second-hand books.

The Superintendent of Documents has publications that cost the Government, including the cost of investigations, millions of dollars that are condemned for waste paper because the time for using them has passed. These are some of the results of the older methods of not distributing the publications, and evidently this is the situation which Mr. Gillett would prefer.

Why Mr. Gillett should make this unwarranted attack upon the Bureau of Mines, attempting to make an objection to the Bureau doing its actual duty, is somewhat amazing. Is it that Mr. Gillett does not believe the Bureau of Mines can be of any value to his State of Massachusetts? If Mr. Gillett thinks so, he is very much mistaken for the fuel investigations of the Bureau of Mines—the telling of manufacturers and others the best kind of coal to buy to furnish the best economic results is of more importance to Massachusetts and New England than perhaps to any other part of the country.

A few years ago the Boston Chamber of Commerce appointed a committee to investigate the fuel supply of New England. Its reports showed that New England's annual fuel bill amounted to approximately one hundred millions of dollars. Of the fuel which cost this vast amount of money, not to exceed 10% was actually applied to a beneficial use.

The importance to New England's great manufacturing interests of such investigations as will increase the efficiency of coal is almost vital to her future prosperity.

The Bureau of Mines is the only national agency charged with the responsibility of making such investigations, and it would seem that New England's best interests would be served by liberal appropriations for such investigations. Again it would seem that efficiency in production would also be of interest to many sections of the country so dependent upon fuel as is New England. We do not object to the action of any con-

gressman looking to greater economy in the doing of the government's work, but we do object to having one bureau, and one of the most useful bureaus, singled out as the object of criticism.

While taken as a whole, the Bureau of Mines has not suffered much in a monetary way, the MINING CONGRESS JOURNAL cannot quite understand the animus of these gentlemen who are continuously harassing the very excellent and efficient Bureau of Mines. This new bureau is doing a wonderful and effective work both for safety and in the interests of the men who use fuel. Its work has won the praise of the men in all walks of life. Whether it is Dr. R. W. Raymond, internationally known to everyone in the mining engineering profession, who said: "At all events, this has been the case of the Bureau of Mines, the admirable work of which has won the praise of the world," or whether you take a mine worker writing in the *Mine Workers' Journal* of February 11, 1915, who says: "The Bureau of Mines has been a godsend to this country," the commendation ranges all the way from a man of the caliber of Dr. Raymond to the miner who scribbles his thanks to the Bureau on a torn piece of foolcap paper. The American Mining Congress knows that the Bureau of Mines is doing a splendid work for the mining industry. It believes in the Bureau of Mines and it does not understand petty and vicious attacks that are being made from time to time by those who ought to know better.

It would be fair to state in passing that the attacks upon the Bureau of Mines brought forth much commendation for the work from such men as Mr. Mondell, of Wyoming, Mr. Borland, of Missouri, Mr. Austin, of Tennessee, Mr. Stevens, of Texas, and Mr. Hulings, of Pennsylvania and many other able members of the House were ready to champion and approve the work of the Bureau.

APPROPRIATIONS FOR BUREAU OF MINES

The sundry civil bill for the fiscal year 1916, has passed the House. The bill carries an increase of \$72,300 over the

total appropriations for the Bureau of Mines for the current fiscal year. The increase is made up as follows: for removing the Pittsburgh station to the new buildings \$57,300; petroleum and natural gas investigations \$10,000; equipment and extension of Birmingham rescue station \$3,000; repairs to McAlester station \$500; clerk for the mine inspector of Alaska \$1,500.

The provision regarding the detail of employes to Washington, has been amended so as to authorize the payment of per diem to employes called to Washington for purposes of consultation only, during their stay in the city.

The bill also appropriates \$350,000 to complete the new laboratories of the Bureau at Pittsburgh; \$25,000 for the completion of the postoffice and mine rescue station at Norton, Va., and \$30,000 for the completion of the postoffice and mine rescue station at Jellico, Tenn., and \$1,500,000 for the completion of a new Interior Department building at Washington, to be occupied by the Geological Survey, the Bureau of Mines, and the Reclamation service.

THE FOSTER BILL

The passage of the Foster Bill by the House of Representatives marks another long step in the progress of the Western effort to secure Federal cooperation in the better development of the metal mining industry.

In 1896 The American Mining Congress was organized at Denver for the particular purpose of securing Federal cooperation, its demand at that time being for a Department of Mines, with its chief a member of the President's Cabinet. After many years of fruitless effort it was decided to temporarily relinquish the effort for the creation of a Department, and ask Congress to create a Bureau of Mines. The original effort in this behalf was entirely for the benefit of the metal miners of the West. In 1907, was begun a determined effort, which resulted in the enactment of the first Bureau of Mines act in 1910. This act made practically no provision for the metal mining interests, having been so amended in the committee as to provide only for the mat-

ters of interest to coal mining. Immediately thereafter was introduced a new bill, which was finally approved February 25, 1913, which bill authorized the Bureau to undertake such work as the appropriation provided for. The first appropriation of \$50,000 for Western work was secured in 1912. For the years 1913 and 1914 this appropriation was increased to \$100,000. These appropriations were made to cover both the work looking to safety in the mines and metallurgical research work. Under these appropriations, stations have been established at Denver, Salt Lake, Seattle and San Francisco. Scientific investigations of the intricate problems presented by the mining industry are necessarily slow in coming to fruition, but valuable work has been done, the most important results having been achieved in the abatement of the so-called smoke nuisance and in cheaper methods for the reduction of radium bearing ores.

The appropriation of \$100,000 for continuing this work during the coming year has just been approved by the House and will undoubtedly become effective.

The Foster Bill, more fully described in the January issue of the MINING CONGRESS JOURNAL, adds largely to the facilities of the Bureau of Mines in this behalf, and enables it to cooperate with the states in such a way as to add very greatly to the usefulness of this work. The Foster bill is now on the Senate calendar for third reading, with a bare possibility of its being enacted at the present session. However the time is so short and the amount of business necessary to be transacted so large as to make very doubtful the consideration of the bill by the Senate during the present session. In case the bill shall fail, it is planned to re-introduce it in both Houses at the opening of its next session and it is hoped that those interested and who so greatly need its service provided for by this bill, will continue with increased vigor to urge its enactment.

STATE AID TO MINING DEVELOPMENT

A very interesting suggestion, and one entitled to very careful consideration, is

made in a letter from Mr. J. H. Mulholland, president of the Monarch Mining & Smelting Company, of Wickenburg, Ariz. As a part of a discussion on the question of mine taxation, Mr. Mulholland says:

"A producing mine is depleting a natural resource. I cannot take out a crop of ore, as I can a crop of wheat, and produce another crop to take its place next year. What I have mined this year, and milled, and disposed of, is just that much less value that my property contains. I believe that the State is entitled to a share of the net proceeds of my operation, not as a tax in the accepted sense, but as a royalty, a participation in the proceeds derived from the depletion of a natural resource. Further, I believe that this royalty or participation tax should be treated separately by the State, and that a very considerable proportion of it should be set aside for the purpose of aiding the mining industry in that State—studying it geologically, mapping it thoroughly, providing a State laboratory for the free assaying of prospectors' findings, providing a staff of salaried geologists and mining engineers, whose advice would be available without cost except perhaps for traveling expenses to any prospector or miner in the development of his property, and generally gathering comprehensive, authoritative data concerning the mineral resources of the entire State, which would enable a man looking for a particular mineral to get advice as to the best locality to prospect. This may sound mighty radical to you, but let me give you some reasons.

"We have been complaining about the difficulty encountered in interesting capital in our mining enterprises. Suppose you are a prospector with a property that you need funds to develop. Suppose that that you could carry with you to your coy capitalist, a State map on a large scale of your district showing its topography, known mineralization, known water supply, and geological data. In addition, a written advice from a State mining engineer as to his suggestions regarding further development, the assays from the State laboratory, and the knowledge that this engineer is available from

time to time for further advice and assistance. Don't you think that would take part of the gamble element out of your proposition in his eyes?

"Why shouldn't we have salaried State mining engineers? In the State of North Dakota, the bankers got together and guaranteed a fund of, I think, \$100,000 each year for three years, if I remember correctly, to pay half the salaries of agricultural experts, one for each county in the State, the farmers in the counties to provide the balance of the salaries. Their aim was to raise the land values in North Dakota to \$100 per acre. (These details may not be exactly accurate, as it is some time since I was told about it, but the secretary of the State Bankers' Association can inform you.) If it pays the farmers in North Dakota to have a county agricultural adviser, would it not pay for us in Arizona or in any other mining State, to have a staff of fifteen mining engineers, one for each county, at a cost of about \$3,000 per annum per man? Think of the value it would be to the ordinary horny-handed prospector to be able, for \$10 or \$20 expense, or better still for nothing whatever, to secure trained advice as to the development of his claims."

A prospectors' school opened February 8 at the Colorado School of Mines in Golden with thirty-eight pupils in attendance. The ages of those enrolled for the course range from seventeen to seventy-six.

CENTRAL WEST VIRGINIA COAL OPERATORS' ASSOCIATION

A short time ago the coal operators of the central counties of West Virginia met at Fairmont and organized what they have christened the Central West Virginia Coal Operators' Association, the

organization starting off with a membership that represents forty-three companies and fourteen counties. Now note what its purposes are:

"To conserve coal properties by improved methods of production; to provide the best, the safest and the most efficient means of mining coal and safeguarding employes engaged in mining and handling the product."

The officers are "Uncle" Dan Howard, of Clarksburg, president; vice-president, Cletus H. Jenkins, Fairmont; secretary, A. Lile White, Clarksburg; treasurer, C. J. Ryan, Hepsebah. In addition to these executives, the following are directors, as representing counties: Harrison and Lewis, A. Lesserang and J. Edgar Lang; Marion, George Thomas Watson and Rolfe M. Hite; Mineral and Grant, J. G. Boyd; Tucker, C. W. Callo-way; Gilmer, Randolph and Braxton, R. B. Isner; Upshur, Taylor and Barbour, Lee Sandridge; Monongalia and Preston, T. W. Borgaman and Davis Elkins. Headquarters will probably be in Clarksburg.

DELAWARE PRODUCED IRON

In colonial times and during the early years of national life Delaware was of considerable relative importance as a producer of iron ore for bloomeries and forges, but with the rise of the blast furnaces and the disappearance of the bloomeries Delaware's iron-mining industry ceased to exist, and no iron ore has been produced in the state for many years. The principal mineral products of Delaware now are obtained from quarries, sand and gravel pits, and springs of potable water. The value of the total mineral production increased, according to the United States Geological Survey, from \$425,360 in 1912 to \$541,542 in 1913.

THE EASTERN OHIO COAL MINING SITUATION

The situation in the eastern Ohio coal field was greatly increased in seriousness by the refusal of the Mine Workers' organization officials to submit the questions under dispute to arbitration. For some time past the Federal Conciliation Board, consisting of Hywel Davies and Daniel J. Keefe, has been making an effort to bring about a settlement in this field. After many propositions of various kinds the final offer of the operators was submitted as follows:

Cleveland, Ohio, February 9, 1915.—To D. J. Keefe and Hywel Davies, Federal Commissioners of Mediation:

Gentlemen:—In accordance with the understanding had at the adjournment last Wednesday, that three names be submitted by the operators of eastern Ohio to constitute part of an arbitration board to decide the matters in dispute which have resulted in the past ten months' strike in the mines of eastern Ohio, we have selected and herewith submit the names of Charles E. Maurer, S. H. Robbins and George M. Jones.

These names are submitted with the understanding that they, together with three members selected by the miners, shall choose three disinterested members, who, together with the six members above named, shall constitute a complete arbitration board of nine members, and that the decision of this board shall be final and binding on both operators and miners.

In the event the members selected by the operators and miners are unable to agree on the election of three disinterested members within three days from date, then we agree that said disinterested members shall be appointed by the President of the United States. (Signed) The Pittsburgh Vein Operators of Ohio.

The refusal of the Mine Workers officials to name members of such arbitration board and their determination not to submit the questions in dispute to arbitration brought to an end all hope of an early settlement of this controversy.

The district involved embraces Belmont, Jefferson and Henderson Counties in Ohio. The coal mined is geologically classified as "Pittsburgh coal"; because the Pittsburgh seam crosses under the Ohio river from West Virginia

to Ohio. It is a good coal, high in heat-unit quality, but less easy to mine and possessed of a little more impurity than the coal mined from the same seam in Allegheny, Washington and Greene counties in Pennsylvania, and Hancock, Brooke and Ohio counties in West Virginia. It is highly esteemed as a railroad locomotive fuel, and much of the output of Eastern Ohio is used for this purpose, a considerable quantity of it being shipped to Canada and the Northwest via the Lakes for railroad use. It does not make a serviceable coke, as coal from the Pittsburgh seam in certain restricted localities does, hence the coal is sold for raw fueling uses solely.

In the joint wage conferences of the miners and operators at Philadelphia in 1914 no agreement was reached. There was, accordingly, a "suspension" in the miners' nomenclature, which means that while there was no strike the joint wage agreement had expired by limitation, and the men refused to work unless assured that the wage rate demanded would be paid. In the Pittsburgh district, the rate in which is basic as to all others in the United States on differential parities, the operators and district officials of the miners early came to an understanding, and work was resumed. This acted as a sedative to industry, because it assured a coal supply, no matter what might happen in Ohio, Indiana and Illinois, the other three States which are jointly interested in what is known as the Interstate Joint Wage Agreement.

Illinois operators, with whom are closely associated those in Indiana, had some re-adjustments upon which they insisted, so that there was a lapse of several weeks in those two States and Ohio before a wage agreement was reached. Ohio, as a State, held out for several weeks, and the "suspension" developed into what is known as a "strike." After several conferences the operators of the Hocking and some other districts

in Ohio came to terms on a compromise; those of Eastern Ohio held out, saying that they could not pay the rate demanded, which was for all coal mined as it came to the tippie before screening, the wage rate heretofore having been for all coal that passed over a screen with bars $1\frac{1}{4}$ inches apart and having a stipulated superficial area. The operators declared that the figures insisted upon by the miners' organization was virtually an increase of rates as compared with the basic rate in the Pittsburgh district. Moreover, in Ohio there had been enacted a law, at the instance of Senator William Green, now secretary-treasurer of the United Mine Workers of America, which imposed a heavy penalty upon coal-mine operators who failed to pay their miners for all the coal sent out by them to the tippie. This law, known as the Green mine-run act, also made null and void any private agreement on the part of operators and miners to set aside its arbitrary provisions. This point was contested, and the Supreme Court of the State adjudged it constitutional; this has just been affirmed by the Supreme Court of the United States on appeal.

The objection of the Eastern Ohio operators to complying with the terms of this Green act is that under its operation the miners would multiply dangers in their mines by blasting the coal down with excessive charges of powder; that this practice would also greatly depreciate the salability of their product, as it would be so shattered that it would disintegrate on exposure to the air and elements; that it would stand transit less effectively; that it would result in obtaining a large percentage of the product that would be unsalable, or salable only at an unremunerative price, therefore at a loss to them. These allegations seem, from many tests and experiences of many old operators, to have been well established as to verity.

The operators have made several alternative propositions to the miners' officials, in no case asking that the men accept any less remuneration than the equivalent of the rates paid in the Pittsburgh district, which they have, from long established custom, been paying. They assert that their motive is to

preserve their coal in the hill, to make that brought out salable at the best possible price; that this price is determined by the price at which operators of neighboring districts sell their coal; that a workmen's compensation law imposes upon them new obligations for safety and remuneration for accidents and fatalities; and that, therefore, they must take every precaution to secure a high-class of product and the maximum of safety in the operation of their mines by making it a condition of their employment that the men shall observe safety precaution; that by excessive blasting the coal down this cannot be secured.

The mines have been idle since March 31, 1914. The operators have been as sorely pressed as have been their workmen and their families; but the latter have been assisted by the working members of the United Mine Workers of America and of the labor unions of the country, the Socialists and by individuals. They have suffered, no doubt; but what of the operators? Their money has been invested and it has brought no return; in fact, idleness has been a source of expense, for mines that make water must be pumped; idle mines must be patrolled to safe-guard against fire and falls of roof and sides. Incomes to meet this expense have been cut off, so that the operators have suffered about as much as the workmen.

What is the solution for such a situation? Mines cannot be operated without machinery as well as men. Mines cannot be opened and maintained without the investment of large sums of capital. Shall capital not have its wage as well as labor? Is it not a situation that calls for lawful control?

Thinking men are seriously considering these questions.

The MINING CONGRESS JOURNAL will welcome a discussion of this general subject.

Over forty mineral substances are found in California. The total value of the output of these for the last year is expected to total nearly one hundred million dollars.

RADIUM AT THE CAPITAL

NOTABLE EXHIBIT OF PRECIOUS MINERAL RESULT OF COOPERATIVE WORK OF DOCTORS DOUGLAS AND KELLY AND U. S. BUREAU OF MINES—INCREASED PRODUCTION—COST LOWERED

On January 27, amid the applause of his colleagues, Congressman Martin D. Foster, of Illinois, exhibited in the United States House of Representatives two small tubes containing in all \$11,000 worth of radium, the first fruits of the work of the United States Bureau of Mines in that branch of research in co-operation with the National Radium Institute, made up of Drs. James Douglas and H. A. Kelly. Representative Foster, in addressing the House, said:

"Mr. Speaker, a year or two ago there was organized the National Radium Institute. Dr. Howard Kelly, of Baltimore, was elected president, and is still president of the institute. Leases were obtained on carnotite mines in Colorado, from which they are to take out 1,000 tons of ore, and the radium is to be extracted under the supervision of the Bureau of Mines.

"Some time ago it was said before the Committee on Mines and Mining by certain gentlemen who were interested in the business of extracting radium from the ore that the government would never be able to succeed in its undertaking; that they had no process known for extracting radium that they would be able to demonstrate was successful.

"I am pleased today to say to the members of the House that under the process which has been put into operation by the Bureau of Mines they have been able to extract the radium from the ore, and I have a letter from Dr. Kelly, president of the National Radium Institute, to Secretary Lane, in which he says:"

Washington, D. C., January 27, 1915.

The Honorable the Secretary of the Interior,
Washington, D. C.

My dear Mr. Secretary: I herewith gratefully acknowledge, in behalf of the Radium Institute, the receipt from the Director of the Bureau of Mines of 171 milligrams of hydrous radium bromide, to be applied by the institute to purposes before planned.

It gives me the greatest pleasure in ac-

knowledging this receipt, and in thus realizing the fruition of our hopes to thank the bureau for the extraordinary success of its labors in thus producing radium by simplified methods to be used for the public good, the entire process being developed in a plant both planned and operated by the government, under the direction of Dr. C. L. Parsons, of the Bureau of Mines.

This radium will at once be put into solution and begin its course of beneficent activity in the service of suffering humanity.

With the radium already in our hands, the successful treatment of many conditions has been established beyond peradventure. Many of these cases have been utterly beyond the reach of surgery or other therapeutic measures. We have, however, felt throughout the past months the inadequacy of our supplies to meet the urgent needs in individual cases. We feel, therefore, an entire confidence that the supply now accumulating and heralded by this delivery will enable us to treat successfully conditions up to this time beyond our reach.

Very sincerely yours,

HOWARD A. KELLY,

President of the National Radium Institute.

Continuing, Congressman Foster said:

"I might say further that by the end of the year 1915 it is confidently expected by the Bureau of Mines that they will be able to supervise the extraction of seven grams of radium, which Dr. Kelly and Dr. Douglas desire, and then the government will secure its share of the profit in radium which comes from the operation of this plant in Denver, Colorado.

"So I congratulate the country upon the fact that the government has been able to do this work. Especially are we gratified at this time, when we read of so many human lives being sacrificed in war, that there are men like Dr. Kelly and Dr. Douglas who are willing to give from their private funds \$75,000 each and who have lately removed that limit and are willing to furnish more that they may secure this radium for the benefit of humanity and to save human life. I cannot too strongly commend the work of these men for the benefit of those who

suffer from disease. And I am glad to come to the House today and bring with me this small amount of radium, though it represents a value of \$11,000 of this rare metal. I hope that a sufficient quantity of it will be obtained so that it may be placed in the hospitals of our country, where human life may be saved and where those who are afflicted may be saved, and that we may have other ways of curing these diseases without resorting to a surgical operation and which in other cases can not be done. In this little tube which I hold in my hand there is \$5,000 worth of this precious metal, and in the other tube there is \$6,000 worth."

Of scarcely less historic interest was the presentation at an earlier hour on the same day of the 171 milligrams of radium bromide to Dr. Kelly, of the National Radium Institute, whose letter of acknowledgment was read by Representative Foster on the floor of the House.

The presentation of the precious substance, made possible through the beneficence of Dr. James Douglas of New York, and Dr. Howard A. Kelly, of the Johns Hopkins University Hospital, of Baltimore, was made by Assistant Director Van H. Manning at a luncheon at the Washington office of the Federal Bureau of Mines. Secretary Lane, of the Interior Department, Representative Foster, Dr. Kelly, Dr. C. L. Parsons and Assistant Director Manning made addresses.

Secretary Lane extended congratulations on there having been achieved something which had been declared impossible—the production of radium from American ores in America by original methods, entirely independent of those

employed and so zealously guarded abroad. He expressed the hope that Congress would take favorable action on the bill designed to develop the radium industry in this country.

Dr. Kelly declared that the successful treatment of many cancerous growths by the use of radium had been estab-



HON. M. D. FOSTER

Chairman Mines and Mining Committee, House of Representatives

lished beyond question. The inadequacy of the supply, which had prevented use in many urgent cases he believed would now be remedied as the result of the government becoming a steady producer of the mineral.

Dr. Parsons stated that the present consignment of radium had been refined within nine months of the beginning of

operations and predicted that the seven grams it was originally planned to produce within the first three years' work would be available in one third that time.

The National Radium Institute was organized about two years ago by Doctors Douglas and Kelly for the purpose of leasing or purchasing carnotite ore bearing lands in Colorado and to build



IN THE CARNOTITE COUNTRY, PARADOX VALLEY, COLORADO

and operate a plant for the purpose of refining radium. The money necessary to build the plant and to pay for mining the ores and operating the mill was furnished by Messrs. Douglas and Kelly, the U. S. Bureau of Mines supplying the expert service under the leadership of Dr. C. L. Parsons, who has been in charge of the operation of the work.

The radium presented Dr. Kelly will be used in hospital work, the arrangement with Doctors Douglas and Kelly being that a supply up to a certain amount

shall go to them for hospital services, after which all produced shall be the property of the United States.

The operations of the National Radium Institute, under the supervision of the Federal Bureau of Mines, were conducted at Long Park, near Paradox Valley, in Montrose County, Colorado, and in Denver. As one of the results of the work and the investigation of processes Director Holmes has announced the probable production of radium at one-third of its present cost. Messrs. Lind and Whitemore, of the Bureau of Mines, state that their investigations show that carnotite carries proportionately to its content of uranium as much radium as pitchblende or other uranium minerals—that is, the radium has reached its maximum ratio to the uranium from which it is derived and is thus in equilibrium. From published results of experiments made on casual specimens of carnotite it had been popularly supposed that carnotite was less rich than pitchblende in radium.

Figures given out by the United States Geological Survey show 1914 to have been a record year in the production of radium, uranium and vanadium ores in this country. The output amounted to about 4,300 short tons of dry ore carrying 87 tons of uranium oxide and 22.4 grams of metallic radium. The ore was valued at about \$445,000. The ore produced in 1913 contained 41 tons of uranium oxide and 10.5 grams of radium, and that produced in 1912 contained 26 tons of uranium oxide and 6.7 grams of radium. About nine-tenths of the contained radium is thought to be recoverable under improved processes.

In Utah the Standard Chemical Co. made the first commercial production of carnotite ores from the Henry Mountains during the year, and the commercial production of vanite, a radium-bearing mineral new to science, accompanied by other uranium minerals, was begun at Temple Rock, forty-five miles southwest of Green River. Shipments were made from newly opened carnotite deposits at Court House, northwest of Moab, Utah, and from deposits sixteen or eighteen miles southeast of Moab. A first ship-

ment was also made from Blue Mountain, Routt County, Colo.

The Paradox Valley region was, however, as usual the chief producing area, and from it came the bulk of the ores. The Standard Chemical Co. was the largest single producer and shipped more than half of the country's output.

Two companies, the Standard Chemical Co. and the Radium Co. of America,

MICHIGAN'S COLLEGE OF MINES

The Michigan State legislature is asked for an appropriation of \$154,780 for maintenance and special purposes in connection with the Michigan College of Mines for this year.

Prof. E. D. Grant, extension lecturer for the Michigan College of Mines, has been making a three-weeks lecturing tour of the State.



LABORATORY OF THE DENVER STATION OF THE U. S. BUREAU OF MINES WHERE THE RADIUM PROCESS IS BEING WORKED OUT

Left to right.—Dr. R. B. Moore, Karl Kithill and C. F. Whittemore.

produced radium salts during the year, and Dr. W. A. Schlesinger started a radium-refining laboratory. The opening of the European war stopped nearly all operations in both mines and reduction plants, for the two companies mentioned sold their product largely in Europe and practically all the ore bought by brokers was sold abroad. A little more than 1,200 tons of ore, containing 28.1 tons of uranium oxide and 7.2 grams of radium, was consigned to Europe, but as the foreign refineries were closed, a part of it was held in transit.

MINE BUREAU CHIEF UPHELD

Judge McCarrill, in the Dauphin County Court, has made absolute the rule dismissing the case brought by James Matthews, president of the Ninth District of the United Mine Workers of America against James E. Roderick, chief of the Pennsylvania Bureau of Mines. The suit was brought to restrain the chief from issuing mine foreman certificates to a number of applicants who had not worked for five years at the face of a mine.

A NOVEL METHOD OF CONSERVATION

The State of Oklahoma has recently enacted a law designed to so control the production of oil within the state as to prevent waste. A similar law, looking to the control of gas production, is now under consideration by the Legislature. This experiment will be watched with careful interest by the advocates of the theory that coal, being a source of power, is so charged with the public use as to be amenable to state control. There is, however, a wide difference emphasized by the rule laid down by the courts, to the effect that oil and gas must be recovered from the ground and reduced to physical possession, before it becomes the property of the surface owner, or lease-holder. Then again, an oil or gas well will take from the ground all of the oil or gas within a considerable distance from the well without reference to the boundary lines of the owner. This leads to the drilling of wells near the boundaries of any property, with a view to securing as much as possible of the oil taken from the land of the adjoining owners, perhaps stimulated by David Harum's construction of the Golden Rule, "Do unto the other fellow as he would do to you, and do it fust."

These physical conditions compel the owner of property adjoining a property upon which a successful well has been brought in to drill off-set wells if he is to prevent the first well from exhausting the oil from his own property.

This situation in Oklahoma has led to a very great over-production of oil and a startling over-production and waste in gas. It has been estimated that in the Cushing field alone gas has been wasted at the rate of 200,000,000 cubic feet daily, and that during the last year the pressure has been reduced from 600 pounds to 200 pounds. This waste of 200,000,000 cubic feet daily is estimated to equal the value of 10,000 tons of coal.

The production of oil in excess of the present market demand entails the cost

of storage and the loss by evaporation. The cost of storage of oil is about twenty-five cents per barrel, while the loss by evaporation approximates ten per cent during the first year. These losses, added to the losses by fire of oil in storage, approximate to \$10,000,000 during the past year. The cost of storage is so great that the small independent producer is frequently unable to meet this expense, and in consequence is forced either to allow the neighboring operators to take the oil from under his land, or else to produce it and dispose of it at any price which is offered. It is alleged that this condition of over-production enables the pipe-line companies and allied refining interests to increase their profits at both ends. This process has been repeated until it is evident that over-production benefits nobody, save the combined transportation and refining interests.

Upon this point a brief prepared by the independent producers of Oklahoma, in support of this bill, presents the following statement:

The price of oil is cut for the following alleged reasons:—First, in order to pay for the costs incident to this field storage, and Second, to stop the drill and thereby prevent new production. When the prizes are reduced, the cut is not only sufficient to pay the cost of such storage, but also affords a large margin of profit on the oil purchased not alone in this particular field, but elsewhere in the state and country.

The net result is to give a large balance in favor of the marketing companies at the expense of the producer. For example, in the eight months succeeding the cut in the price of Cushing oil from \$1.05 to 75c, and then to 55c per barrel, some sixty million barrels of oil have been produced in this State. Of this amount some eighteen million barrels is reported to have been put in storage in the Cushing field. A gross cut of 50c per barrel on the oil thus put in storage, would amount to \$9,000,000, which sum is about sufficient to cover the cost of such storage, and the probable evaporation losses of the lighter and more valuable constituents. This cut in price, however, is more far-reaching than this, since it also affects

the forty-two million barrels of oil which have been run to market by the pipe line companies, and represents a net profit to them, over and above the cost of the storage and all expenses in connection therewith, of more than \$15,000,000. This amount has been taken from the producers in this field alone, without any resulting benefits to the public at large, to the State, or to any interest save the marketing companies.

This does not represent the total profits of the marketing companies, however, since the general cut in price throughout the country, following the condition of over-production in the Cushing field has netted them at a conservative estimate, not less than \$50,000,000 in the past eight months.

The bill as enacted, controlling the production of oil in Oklahoma, will be found on another page of this issue. A similar bill, designed to control the waste in gas, has been introduced in both Houses of the Oklahoma Legislature, has been favorably reported by the committees in both Houses, and seems likely to be enacted during the present session of the Legislature.

OREGON'S 1914 MINE YIELD

Oregon's metal production for 1914, according to United States Geological Survey estimates, shows decreases generally from the figures for 1913. The gold yield for 1914 was about \$1,600,000 against \$1,627,710 in 1913. The estimated production of silver for 1914 was 126,000 fine ounces and the output for 1913 was 179,063 fine ounces.

There are about 175 producing mines in Oregon, of which 125 are placers. Most of the placer mines are run on a small scale and two-thirds of them are hydraulic mines. The largest production of gold from deep and placer mines comes from Baker County, which yields about eighty-four per cent of the total gold of the State.

COLORADO MINES ACTIVE

Mining machine dealers in Denver report the sales of machinery during the new year this far unprecedented. A large number of new and rich strikes have been made during the past several

months in Colorado. Among the counties reporting good finds are: Teller, gold; Lake, gold and zinc; Chaffee, gold, silver and copper; Custer, copper and gold; La Plata, gold; Gunnison, silver and gold; Saguache, gold; Moffat, carnotite or radium-bearing ore; Boulder, gold, and Clear Creek, molybdenum.

PLATINUM IMPORTS REDUCED

The importation of platinum, affected by the European War, is a matter of decided concern to the dental profession. Platinum is very necessary in the placing in position of artificial teeth.

The very largest part of the world's supply of this precious metal comes from Russia. The supply from that country has for several years been lessening owing to the fact that the ore mined is less rich than that taken out in the past. South America and several other countries yield a small amount of platinum. Last year in this country 701 ounces of refined platinum were produced from deposits in California, Oregon and Washington. In the same period of time 300,000 ounces were imported from Russia. It can readily be seen, therefore, that our production of this very valuable white metal is practically negligible.

The pins which fasten artificial teeth in place are made of platinum. No other metal is satisfactory for this purpose. Gold cannot be heated to the welding point and other metals oxidize or are affected by the acidity of the mouth. Dentists have for a number of years been seeking a satisfactory substitute in a composition metal. A number of such substitutes are on the market, but all are said to be lacking in some of the requisites.

UNITED STATES TOTAL GOLD PRODUCTION

The total gold production in the United States from 1792 to January 1, 1914, is estimated by the United States Geological Survey at \$3,549,799,400; the value of the country's silver yield for the same period is given at \$1,709,517,600.

OKLAHOMA'S OIL CONSERVATION LAW

In act defining and prohibiting waste of crude oil or petroleum, providing for the equitable taking of the same from the ground, conferring authority on the Corporation Commission, prescribing a penalty for the violation of this act and declaring an emergency.

Section 1. That the production of crude oil or petroleum in the State of Oklahoma, in such manner and under such conditions as to constitute waste, is hereby prohibited.

Sec. 2. That the taking of crude oil or petroleum from any oil-bearing sand or sands in the state of Oklahoma, at a time when there is no market demand therefore at the well at a price equivalent to the actual value of such crude oil or petroleum is hereby prohibited, and the actual value of such crude oil or petroleum at any time shall be the average value, as near as may be ascertained, in the United States at retail of the by-products of such crude oil or petroleum, when refined, less the cost, and a reasonable profit in the business of transporting, refining and marketing the same, and the Corporation Commission of this State is hereby invested with the authority and power to investigate and determine, from time to time, the actual cash value of such crude oil or petroleum by the standard herein provided, and when so determined said commission shall promulgate its findings, by its orders duly made and recorded, and publish the same in some newspaper of general circulation in the state.

Sec. 3. That the term "waste" as used herein, in addition to its ordinary meaning, shall include economic waste, underground waste, surface waste, and waste incident to the production of crude oil or petroleum in excess of transportation or marketing facilities or reasonable market demands. The Corporation Commission shall have authority to make rules and regulations for the prevention of such wastes, and for the protection of all freshwater strata, and oil and gas-bearing strata, in any well drilled for oil.

Sec. 4. That whenever the full production from any common source of supply of crude oil or petroleum in this State can only be obtained under conditions constituting waste, herein defined, then any person, firm or corporation, having the right to drill and produce oil from such common source of supply, may take therefrom only such proportion of all crude oil and petroleum that may be produced therefrom, without waste, as the production of the well or wells of any such person, firm or corporation bears to the total

production of such common source of supply. The Corporation Commission is authorized to so regulate the taking of crude oil or petroleum from any or all such common sources of supply, within the State of Oklahoma, as to prevent the inequitable or unfair taking, from a common source of supply, of such crude oil or petroleum, by any person, firm or corporation, and to prevent unreasonable discrimination in favor of any such common source of supply as against another.

Sec. 5. That for the purpose of determining such production, a gauge of each well shall be taken under rules and regulations to be prescribed by the Corporation Commission, and said commission is authorized and directed to make and promulgate, by proper order, such other rules and regulations and to employ or appoint such agents with the consent of the Governor, as may be necessary to enforce this act.

Sec. 6. That any person, firm or corporation, or the Attorney General, on behalf of the State, may institute proceedings before the Corporation Commission, or apply for a hearing before said commission, upon any question relating to the enforcement of this act, and jurisdiction is hereby conferred upon said commission to hear and determine the same. Said commission shall set a time and place when and where such hearing shall be had and give reasonable notice thereof to all persons or classes interested therein by publication in some newspaper, or newspapers, having general circulation in the State, and in addition thereto, shall cause reasonable notice in writing to be served personally on any person, firm or corporation complained against. In the exercise and enforcement of such jurisdiction, said commission is authorized to determine any question of fact arising hereunder, and to summon witnesses, make ancillary orders, and use such means and final process including inspection and punishment as for contempt analogous to proceedings under its control over public-service corporations as now provided by law.

Sec. 7. That appellate jurisdiction is hereby conferred upon the Supreme Court in this State to review the action of said commission in making any order, or orders, under this act. Such appeal may be taken by any person, firm or corporation, shown by the record to be interested therein, in the same manner and time as appeals are allowed by law from other orders of the Corporation Commission. Said orders, so appealed from, shall not be superseded by the mere fact of such appeal being taken, but shall be and remain in full force and effect until legally suspended or set aside by the Supreme Court.

Sec. 8. That in addition to any penalty that may be imposed by the Corporation Commission for contempt, any person, firm or corporation, or any officer, agent or employe thereof, directly or indirectly violating the provisions of this act, shall be guilty of a misdemeanor, and upon conviction thereof, in a court of competent jurisdiction, shall be punished by a fine in any sum not to exceed \$5,000, or by imprisonment in the county jail not to exceed 30 days, or by both such fine and imprisonment.

Sec. 9. That in addition to any penalty imposed under the preceding section, any person, firm or corporation violating the provisions of this act shall be subject to have his or its producing property placed in the hands of a receiver by a court of competent jurisdiction, at the suit of the State through the Attorney General, or any County Attorney, but such receivership shall only extend to the operating of producing wells and the marketing of the production thereof, under the provisions of this act.

Sec. 10. That the invalidity of any section, subdivision, clause or sentence of this act shall not in any manner affect the validity of the remaining portion thereof.

Sec. 11. That for the immediate preservation of the public peace, health and safety, an emergency is hereby declared to exist by reason whereof this act shall take effect and be in force from and after its passage and approval.

WORLD'S GOLD PRODUCTION

The world's output of gold for 1914, based on figures and estimates obtained thus far, was \$450,491,800, falling short of the total for 1913 by \$9,802,800. The United States with a yield of \$96,266,800 showed an increase of \$4,116,400, going a good ways toward offsetting the falling off in Africa's return, which was \$200,750,000 as against \$205,875,000 in 1913. Australasia produced \$55,450,000, registering a loss of \$3,775,000 from the preceding year's yield. Canada showed a gain, producing \$17,650,000 in 1914 and \$15,965,000 in 1913. Mexico's production was \$17,750,000 in 1914, being \$500,000 under the figures for 1913. Russia produced \$21,500,000; her yield in 1913 was \$23,275,150. India produced \$10,425,000 in the yellow metal in 1914 and \$12,450,000 the year preceding. South America increased her yield from \$10,325,000 to \$10,550,000. Japan's yield was \$3,225,000 in 1914 and \$4,075,000 in 1913.

PROHIBITION BENEFITS MINERS

Very satisfactory reports regarding the moral and beneficial effects of prohibition in the mining towns of West Virginia, as well as in the other sections of the state, are being received from that commonwealth. A considerable number of miners have already started savings accounts, while many others who were always behind at the company's stores have balances due them each month. Their families are better cared for and an increased efficiency on the part of these workmen has been noted. More time is being spent at home or in surroundings more favorable than that of the saloon.

Court records show a decrease in lawlessness in towns and cities, and on a number of the branch railroad lines, where in some cases under old conditions it was considered unsafe for a woman to travel alone. More time is being spent in self-improvement by those who were formerly in the habit of whiling away their hours in a saloon. Of course West Virginia possesses thousands of workmen who were in the sober class before the passage of the law, and to none, perhaps, is the law more welcome since it means for them a better citizenship. The improved conditions brought about by the effects of prohibition will attract many more such as themselves, while the less desirable, through the enforced removal of temptation, have removed or have changed, in a degree, at least, their old style of living.

Recently a number of coal miners came to West Virginia from Illinois because the state was dry and offered better opportunities and more desirable surroundings.

RICHARDS RECEIVES MEDAL

Robert Hallowell Richards, professor of mining engineering and metallurgy of the Massachusetts Institute of Technology, Boston, Mass., has been awarded the gold medal of the Mining and Metallurgical Society of America for 1915, in recognition of his services in the advancement of the art of ore-dressing.

SAFETY FIRST

COOPERATION AND UNDERSTANDING ESSENTIAL—THE RESPONSIBILITY OF THE INDIVIDUAL—PROBLEMS TO BE SOLVED AND OBSTACLES TO BE REMOVED

The wide-spread recognition of the Safety-First idea cannot but be most gratifying to all who have labored to bring about a greater and better conservation of human life and of human weal. When advertisers come to use, as many of them are now doing, the slogan Safety-First in the promotion of their enterprises and for the increase of their sales, one can well say that Safety-First has, indeed, arrived. What was at first but an idea and later an isolated movement, sporadic in its character, primitive in its application, and championed only in a few widely separated communities by those who were often misunderstood, and not always encouraged in the work, has now grown to be a great national issue, lauded and indorsed wherever its true purpose is understood.

The value of, and the need for Safety-First in all that the expression implies is being everywhere extolled by writers and speakers. The press and the platform, yea, and the pulpit as well, are commending it and urging it. Safety, efficiency and conservation (sane, practical, reasonable, conservation) are closely allied. The gospel of this trinity is the working, living gospel of rightful, worthy achievement. Without the maximum of safety—the minimum of hazard—there cannot be the highest degree of efficiency. Human conservation has to do with both safety and efficiency. A fuller degree of safety means true conservation, and conservation works for efficiency.

We, in the United States, are living in a practical age and equally so in a humanitarian age. Never have the possibilities for human achievement been more fully recognized, nor has any age ever placed a higher value on human life than that held in our own country today. The Safety-First idea is one of the phases of this condition. Today the cause is

advocated and forwarded by individuals and organization alike. That useful branch of the governmental service, the United States Bureau of Mines, has its mine-safety stations, its mine-rescue cars, its first aid equipment, its instructors, its publications, its research investigations, its experimental work, its corps of rescue workers, its multiplicity of avenues of aid reaching out and branching out in an ever-widening field. State mining departments, individual mine owners and mining companies, institutes, societies, associations of owners and operators, associations of miners, organizations of every character have taken up the work and are extending its interests and activities. Railroads, both electric and steam, are strongly pushing the movement with results that have far exceeded their most sanguine expectations. No greater testimony can perhaps be presented than the reports of several of our great railway companies, showing no passengers killed in years and a steadily decreasing number of killed and injured among their employees. It is already accepted as a fact that traveling by rail is actually freer from hazard than remaining at home and engaging in one's accustomed vocation and avocations.

In the reduction of hazard the obligation, the responsibility of the individual plays a most important part. To insure a higher degree of safety it is necessary to have cooperation by the individual. Danger can be minimized through the application of Safety-First measures, rules and regulations, but absolute immunity from accident can never be assured. Many accidents are due to natural causes, those beyond the power of the individual to control, but it is admitted that in a very large proportion of fatalities and casualties the human factor is the predominating one. Automobile regulations, for example, may be

so comprehensive and so inclusive as to practically cover and guard against every contingency affecting the pedestrian. Of course such regulations are not perhaps actually in force anywhere, but assuming that they were, there would still be certain obligations resting on the foot-traveler to make them fully operative—a certain cooperation upon his part is necessary. The pedestrian must do his share, and this is true in all lines and in all walks of life.

Without, in any way wishing to reflect on the employe, who has a right to de-

measures, having for their purpose the safe-guarding of the lives, limbs and health of workers, is usually to be found among the more or less ignorant. With education comes better understanding of the true purpose of the rules that, to the less enlightened minds, have seemed onerous, burdensome and restrictive. With knowledge comes a dissipating of that suspicious attitude that is usually the concomitant of ignorance.

Cooperation and understanding are absolute essentials for real success in Safety-First work. Commendable as the work



FIRST ANNUAL FIRST AID CONTEST, PITTSBURGH COAL OPERATORS' ASSOCIATION.
Treatment for broken spine.

mand and to receive the maximum protection against hazard while engaged in his daily toil, it is, nevertheless, true, that there is not always that full cooperation on his part that is so to be desired and so necessary to secure the best results. It is not an unusual experience of employers to find a disposition upon certain employes to disregard, wherever possible, certain rules designed for the operatives' protection. Particularly is this the case where such regulation entails something of extra exertion or the expenditure of time for which there is no monetary return.

It is only just to say that a large proportion of the violation or disregard of

always is, even more praise is deserved by those who are working under conditions where doubt, suspicion, and perhaps, dislike are to be met with and overcome—these together with inertia, which is far from being an inconsiderable factor in all movements for betterment. In no small number of cases employers are conducting or aiding schools to wipe out illiteracy among their men. Among these may be named the W. G. Duncan Coal Company, which has built and equipped a schoolhouse at Graham, Kentucky, in which night classes are being conducted. This is a part of the statewide campaign against adult illiteracy in Kentucky.

The saloon has been an element weighing heavily against safety and efficiency. Through the enactment of restrictive or prohibitory laws, and also through the rules put into force by employers, the power for harm is lessening. The railroads, practically all of them, have made abstinence from alcohol a condition of employment with trainmen. Mining and manufacturing companies are fast falling in line. The Delaware, Lackawana and Western Coal Company is one of those



RESCUER OF U. S. BUREAU OF MINES.
Showing proper way to carry unconscious man.

to take up this matter as one of the phases of the Safety-First campaign in its collieries. It has served notice on its foremen, drivers, bosses and all others who have charge of other employes, that hereafter they must not enter saloons. The notice to the bosses says they are expected to set an example for the men. Those who violate the company's orders and enter a saloon will risk losing their jobs.

That alcohol and accidents have a relation to one another is known to every accident insurance company. All such companies report that not only are a goodly percentage of accidents due to

drink, but that taking the public at large, the susceptibility to accidental injury and death is greater among those who indulge in intoxicants.

A prominent Pennsylvania operator, who is foremost in the work of forwarding the Safety-First idea in the collieries with which he is connected, says: "The miner's worst enemy in respect to accident is himself, and the various operators have attacked the problem of protecting him against his own carelessness in a score of different ways." The speaker referred to the United States Bureau of Mines' work in using photographs and moving pictures. The photographs published by mining companies, including the Lackawana, which has issued a book of photographs showing the right and wrong way to do everything in the mine and the book of "Don'ts," issued by the Susquehanna, which volume contains specific cautions to all classes of laborers employed in its mines.

So difficult is this problem in its solution and so much is there to combat that one of the large mining companies recently refused to adopt a fuse for firing blasts that took forty seconds longer to burn than those now in use. The argument in its favor was that it gave the miner a longer time to seek a place of safety after lighting the fuse. This very argument was turned against the use of the fuse, in that it gave the firer a longer time in which to get back before the explosion took place. For a number of years the annual reports of the Pennsylvania Department of Mines have called attention to the fact that all but a small percentage of the accidents are due to carelessness and disobedience of rules.

Practically all the large coal companies in Pennsylvania are said to have increased the number of their responsible men, mine foremen and assistant mine foremen, using the additional ones to guard against accident under the title of Safety Inspectors, Patrols, or simply Foremen. Some of the companies divide up their mines into small, easily inspected districts, for each one of which one of these additional foremen is held responsible.

Regular daily inspections are conducted before anyone but the inspector is al-

lowed to enter the mine. These inspections are aimed to discover and mark every dangerous place, detect the presence of gases, and to include every human precaution which human foresight can devise. Throughout the working days the inspectors and foremen continue this search for lurking dangers. The number of assistant foremen and safety inspectors has been increased to such an extent that in one company the miners claimed undue interference with their work and went on a strike as a result.

ized is testified to in the increasing interest by them in first-aid and rescue work and all else that pertains to safety and better conditions in mining. During the last five years over 25,000 men have been trained by the United States Bureau of Mines in mine rescue and first-aid work, while those receiving such instructions through associations, institutes and societies totaled several times that number.

An individual case of company instruction is that of the Philadelphia and Reading Coal & Iron Company, which



AUTHORIZED SHOT FIRER TAMPING A HOLE.

Fire boss' notations on post indicating dates of inspection of heading.

In these mines if a workman has been warned to set a prop or pry down a loose roof, he is discharged if he fails to carry out instructions within the proper time allowance.

The same operator is authority for the statement that "It is probably safe to say that almost every accident in the mines is due to some human error or carelessness, except when nature springs a new surprise or conceals a dangerous condition so cunningly that forty years of experience are insufficient to guard against it."

That the value of and necessity for cooperation by the worker is being real-

has instituted a system of reminding the superintendent and mine foremen of their short-comings and their accomplishments through photographs taken in the mines. These are reflected on a screen at meetings of the officials. Mistakes are pointed out more by comparison with the good work of other men than by directly calling attention to them. Through these views it is plainly seen which style of work is the best.

As showing the value of the instruction to the mine worker himself is instanced a concrete example in the case of a member of a team trained by a Bureau of Mine Rescue Car force at

Tonopah. This man was at work in a mine, putting fuses and caps together at a distance of about 400 feet from a station when he dropped a box of eight caps, the explosive wounding him terribly in arm, leg and foot. He immediately cut his shoe-strings out of his shoes, and making a tourniquet, put it in place. He was bleeding profusely and would, according to the surgeon, have died in about five minutes. After administering first-aid treatment to himself, he crawled 400 feet to the station and telephoned for help. Over 200 pieces of copper were found in his body, and yet he came out of the hospital without the loss of arm, leg, finger or toe.

Safety devices and safety appliances, safety rules and regulations for the worker are more and more being availed of, but the fact must ever be borne in mind that all devices and rules will, after all, be of little value, unless backed up by discipline and by the favorable sentiment and cooperative spirit of the employes. Wherever real success is achieved in the mines or elsewhere it will be through the active cooperation of the individual himself.

Canada's mines rank third among her resources. Agriculture coming first and her forests second. Fisheries rank fourth and furs fifth.

Rescue Truck No. 2, of the United States Bureau of Mines is scheduled to be at Russellton, Pa., from March 1 to March 10, coming from Harwick, Pa., where it has been stationed, February 20 to February 28.

ENGINEERING CONGRESS

The governing body of the American Institute of Electrical Engineers has decided to indefinitely postpone the holding of the Electrical Congress. It, how-

ever, does not effect the plans for the International Engineering Congress which will be held, as originally scheduled, September 20-25, in San Francisco. Full information concerning the Congress may be obtained by writing to The International Engineering Congress, 1915 Foxcroft Building, San Francisco. The congress will be held under the auspices of, and will include, the five national engineering societies—The American Society of Civil Engineers, The American Institute of Mining Engineers, The American Society of Mechanical Engineers, The American Institute of Electrical Engineers, and the Society of Naval Architects and Marine Engineers.

FOR POWER PLANT FIREMEN

A paper of interest and value to firemen in manufacturing plants has just been issued by the United States Bureau of Mines and is entitled "Hand Firing Soft Coal Under Power-Plant Boilers." The paper is designed especially to meet the needs of firemen in plants of approximately 1,000 to 2,000 horsepower capacity. The subject is handled in a simple and understandable manner, free from technicalities, being designed particularly to be read by the firemen themselves. The paper describes various methods of firing soft coal under power plant boilers and how to so handle fires as to get the most heat from the coal and make the least smoke. Copies of the paper may be obtained free by addressing the Director of the Bureau of Mines, Washington, D. C.

The total amount of the coal mining output in the United States in 1913, as reported by the United States Geological Survey, exceeded by 80,000,000 tons all the coal that had been mined in this country up to the close of the year 1871.

ARIZONA AND THE MINING CONGRESS

EXCERPTS FROM AN ADDRESS BY COURTENAY DE KALB
AT TUCSON MINING CHAPTER SECTION
ORGANIZATION MEETING

The American Mining Congress enjoys the advantage of being a popular institution. The American Institute of Mining Engineers was unable to do exactly what the Mining Congress is doing, partly because it deliberately kept aloof from politics and also because it represented more especially the operating side of mining. The Mining Congress, on the contrary, possesses a wide field for usefulness in giving intelligent guidance to legislation as the representative of both the capitalistic and the operating sides of the industry.

One of the surest ways to forward the mineral industry is to safeguard it against ill-conceived legislation. The non-partisan political influence of the Mining Congress is therefore the great opportunity of the organization, and in this field its usefulness may be equally great in the initiation of advantageous measures and in the protection of established enterprise from improper restrictions and burdens.

Arizona has need of the activities of the Mining Congress, and we may count upon the Arizona chapter to perform functions of the greatest value in stimulating the development of our resources. It should receive the endorsement and co-operation of all who have the welfare of the state at heart. There is more undeveloped mineral territory here than in any other area of equal size in the union. In Pima county alone there are great unrealized opportunities for the wise employment of capital.

Perhaps we may not anticipate frequent discoveries of phenomenal veins of gold and silver, although, after the experiences in Nevada and more recently in Cripple Creek, Colorado, one may not be too sure of that. Nevertheless, throughout the entire west the superficial

rich cream was chiefly skimmed by the last two generations, but in Arizona we have a wonderful amount of the milk that makes rich cheese, and there is more money in making cheese than in making butter after all, because there is always so much more of it. There are conditions suggestive of extensive areas of gravel that may prove profitable for gold dredging within a radius of a hundred miles from Tucson, awaiting some men with money and faith enough to drill them. There are important districts in which interesting lead and zinc deposits are as yet but feebly prospected. There is a great granitoid complex stretching away to the west and southwest, in which occur monzonites, dacites and granodiorites, that give promise of containing commercial areas of disseminated copper ores. Moreover, many of these so far as the insignificant preliminary prospecting has gone, show larger quantities of gold and silver than are usually present in disseminated copper deposits. It is not because of the brilliant results obtained at Ajo that I say this. Just because there exists an Ajo with its 40 million tons of demonstrated ore containing 1.51 per cent copper, it is not conclusive that there must be others, yet a great mine seldom stands alone. The Ray had its satellites, the Calumet and Arizona projected the anticipated life of the Bisbee district far into the future by its brave plunge deep through barren ground at the Junction Shaft; and no one believes that the Mule Pass range has yet revealed all its store of copper.

So we believe that Pima county has more than one Ajo not because of reasoning from analogy, but because of striking indications, different of course from the Ajo, for outside of the same geological associations it is not to be ex-

pected that the identical characteristics will be repeated. In each new geologic setting new phases, new phenomena, will appear. These circumstances, however, retard development until confidence has been established through the conclusions of competent and unbiased men, for it takes a fortune to prove a great low-grade mine. The Guggenheims spent \$2,000,000 developing Chuquicamata, before venturing to erect a metallurgical plant, but now Chuquicamata is reckoned the largest proved copper ore-body in the world. At Ajo a total of 23,000 feet of hole was drilled by the diamond drill, and 5468 feet of underground work was driven to check the drill samples, before the C. & A. could announce the mine as proved. We know how some of the most experienced mine operators in America looked at Ajo and went away; how others looked a little more curiously and at some further expense, and then quit, and how the C. & A., trusting in the encouragement of its able geologists, took the risk and won!

Well, there are other interesting areas in Southern Arizona; there are some right here in Pima county. They are different from Ajo—as different as Ajo was from any other previously developed and disseminated “porphyry” copper deposit. What is needed is the courageous application of capital to prove these areas.

Preliminary to this, however, there must be some means of carrying conviction to the minds of capitalists that the probabilities of their existence are founded upon something more than the ardent imaginations of prospectors and promoters.

The Arizona chapter of the American Mining Congress can do much toward the unfolding of such resources. It is not enough merely to affirm that opportunities lie open. Some sort of proof must be submitted. For one thing, the chapter can keep a watchful eye upon the activities of the United States Geological Survey and the United States Bureau of Mines, to the end that a fair proportion of the field work of these organizations may be performed in Arizona. I do not mean to even hint that either Dr. Smith of the Geological Sur-

vey, or Dr. Holmes of the Bureau of Mines, is neglectful of Arizona, for such is not the fact, but those who are insistent and whose insistence has the force of an organization behind it, get more than those who sit down and wait.

But we must not depend upon the Government to do the whole work of making known the possibilities of Arizona. This great state, standing first in the union as a copper producer, should seriously assume the responsibility of working out its geological features through the agency of the State Geological Survey. An array of bulletins, giving authoritative data on those areas in the state which afford good economic possibilities, would be more effective than any other form of advertising to awaken the interests and to bring in new capital. It would constitute that sound technical warrant which will furnish bone and sinew for our boosting. One of the important labors of the Arizona chapter of the Mining Congress should be to stand behind this project until a competent State Geological Survey, absolutely outside the pale of party politics, shall have been organized and set to work. There is already available a group of highly trained and able men in the state university who could become the nucleus of an organization that would place an Arizona survey at once on a parity with the best state surveys in America. These men have the proper qualifications; they are unsurpassed in their attainments. They may be too busy with their other duties to carry out the large amount of needed field work personally, but they could supervise it, and, as I said, become the nucleus of an organization that would command the respect and attention of the whole country. The laboratory equipment of the university could also be made available for a time, so as to save initial expense, thus enabling the survey in the beginning to throw a sufficient corps of men at the practical field problem in order to secure prompt results covering a large territory. If this were pushed with sufficient energy it would be possible to issue some preliminary reports of substantial value next autumn. I commend this to the consideration of the Arizona chapter as an opportunity to materially

forward the development of new mining operations in Arizona.

TUCSON SECTION OF THE AMERICAN MINING CONGRESS

Arizona's newly organized chapter of The American Mining Congress is justifying the predictions that it would prove to be an effective organization. The Pima County section of the Arizona chapter has been organized at Tucson with a good charter membership, which is being added to most encouragingly. The preliminary meeting was held January 28 in the headquarters of the Tucson Chamber of Commerce, when the cause and purposes of the organization were presented by E. L. Wolcott, assistant secretary of the Mining Congress. Mr. Wolcott was introduced by J. E. Owens, who acted as chairman of the meeting. Other speakers were C. F. Willis, professor of mining at the University of Arizona; Capt. William McDermott, and Courtenay DeKalb. Mr. Wolcott spoke of the work now being carried on by the Congress. He explained that an associate membership had been created to include all classes of business and professional men and urged the business men to join the organization, saying that busy mines mean busy towns in Arizona and prosperous merchants. He referred to the wonderful mineralization of the state and of the comparative ease with which mining could be carried forward. Mr. Wolcott said that before capital can be brought to Arizona conditions favorable to capital must be created. He suggested the gathering of data on the mineral deposits in all parts of the state and said that the mining industry of Arizona must have a voice in its own management. He referred to the bill now before Congress to provide for a complete mineral survey of the Southwest. The government has been asked to drill test wells in the valleys in the Southwest for the purpose of discovering the extent of the underground waterflow.

Mr. Willis spoke of the surprisingly large number of letters received from all parts of the country asking about the mineral resources of the state and requesting information as to the location of the various mineral deposits. He said that the legislature had been asked to appropriate \$5,000 for the use of the bureau. Capt. William McDermott urged that everyone interested in mines or engaged in business join the chapter, as he said that it would protect industry from vicious laws and be a benefit to the taxpayers. Mr. DeKalb spoke at length concerning the American Mining Congress, its faith in Arizona, the mining wealth of the state, its wonderful possibilities, and of what must necessarily be done to make the most of them. A résumé of Mr. DeKalb's address will be found in another part of the JOURNAL.

On the following day another meeting was held under the auspices of the Luncheon Club at the old Pueblo Club. Among the visitors at the luncheon were Capt. Stacey, U. S. A., inspector-instructor for Arizona; John F. Adler, a prominent business man of San Francisco; Prof. Michael Ortan, of the Polytechnic Institute of Warsaw, Poland, and Dr. Fisher, formerly of the Presbyterian Hospital of New York City. Short talks were given by each of the gentlemen. President Owens, of the club, presided and introduced the speakers.

The Tucson section starts out under flattering conditions, with practically the unanimous support of the business and professional men of Tucson, as well as of all those directly interested in the mining industry.

John H. Robinson, the newly selected secretary of the Arizona chapter, accompanied Mr. Wolcott and was active in the organization work.

CANADIAN MINING INSTITUTE

The seventeenth annual meeting of the Canadian Mining Institute will be held in Toronto, March 3-5. The institute's headquarters will be at the King Edward Hotel.

MINING AT THE EXPOSITION

COMPREHENSIVE DISPLAY UNDER AUSPICES OF THE UNITED STATES BUREAU OF MINES

The mining and metallurgical industries of the United States are to be well represented at the Panama-Pacific International Exposition at San Francisco. This will be the first time in the history of this country that these industries have been officially represented among the government exhibits at an international exposition. There will be four separate exhibits which will be in charge of the United States Bureau of Mines or in cooperation with branches of the industries concerned.

The exhibit, designed to show what the United States Bureau of Mines is doing, is in the Palace of Mines and Metallurgy opposite the main north entrance to the building. Adjoining this on the east is the Experimental Metallurgical Laboratory operated by the Bureau of Mines in cooperation with certain metallurgical industries. Beneath the floor and entered through a shaft and slope in the southern end of the Bureau of Mines space is the Demonstration Mine, designed and operated by the bureau in cooperation with the mining industry. To the southeast of the Palace of Machinery and immediately adjoining the amusement zone is the Petroleum Exhibit, designed and operated by the Bureau of Mines in cooperation with the petroleum industry.

Of these four exhibits, that of the Bureau of Mines in the Mines and Metallurgy Palace is the only one made from and maintained by funds appropriated by the United States Government. The other three are financed by the several industries concerned, the government furnishing only the skilled personnel in the employ of the Bureau of Mines in connection with the investigations and demonstrations.

The importance of the mineral industries in the United States is indicated by the following statistics showing the increase in production of the more prom-

inent products of these industries in the twenty years from 1893 to 1913, viz.:

	1893	1913
Gold, fine ounces ...	1,729,323	4,293,783
Silver, fine ounces...	60,000,000	66,801,500
Metallic copper, lbs..	329,354,398	1,224,424,098
Iron ore, long tons..	11,587,629	61,980,437
Refined lead, short tons	229,333	462,460
Zinc spelter, short tons	78,832	346,676

Similarly, the production of bituminous coal has increased in the same period from 128,385,231 short tons to 478,523,203 short tons, and Pennsylvania anthracite from 53,967,543 short tons to 91,626,922 short tons.

Twenty-eight exhibits are shown in the Bureau of Mines space, in addition to those shown in the Experimental Metallurgical Laboratory, the Petroleum Exhibit, and the Demonstration Mine.

Modern methods of rescue and recovery work are shown. Sets of artificial breathing apparatus are exhibited, appliances for testing this apparatus to secure its safety are shown. There is a gas-proof smoke room. Men wearing the breathing apparatus enter this room which is filled with irrespirable gas and smoke and descend into the mine at the two daily explosion demonstrations. Returning from below they bring out a supposed victim, restore him to consciousness by artificial respiration, bandage his wounds by first-aid methods, and carry him into the typical mine hospital under the management of the United States Public Health Service.

This hospital fully equipped with such appliances for emergency treatment and surgical operations as are necessary is in charge of a surgeon of the Public Health Service and a trained nurse, who cooperate with the mine rescue and first-aid miners of the Bureau of Mines in their demonstrations of first aid, health, and sanitation.

There is an exhibit of safety lamps in

which is shown a device designed by the Bureau of Mines for demonstrating the detection of gas by safety lamps, and a portable safety lamp testing box. A complete collection of the ingredients which go to make up the various classes of explosives, together with samples of the final product is displayed.

The welfare exhibit of the bureau includes a map showing the arrangement

trated by a small apparatus which shows how finely-divided coal dust in contact with a sufficient amount of oxygen furnished by the surrounding atmosphere becomes just as explosive when ignited as black powder. Another exhibit is a model of the rock dust barrier designed by engineers of the Bureau of Mines to liberate into the atmosphere on the occurrence of an explosion a cloud of fine-



PALACE OF MINES, PANAMA-PACIFIC INTERNATIONAL EXPOSITION

and appearances of a hypothetical industrial village.

A map of the United States shows the location of the six rescue stations of the Bureau of Mines and the positions of the eight rescue cars as they move about from mine to mine, conducting their daily demonstrations to miners in safety methods, by which there have been trained over 25,000 miners in modern mine-rescue and first-aid work and at which have been given lectures to more than 150,000 persons, mostly miners.

The explosibility of coal dust is illus-

trated by a small apparatus which shows how finely-divided coal dust in contact with a sufficient amount of oxygen furnished by the surrounding atmosphere becomes just as explosive when ignited as black powder.

Another exhibit is a model of the rock dust barrier designed by engineers of the Bureau of Mines to liberate into the atmosphere on the occurrence of an explosion a cloud of finely-divided rock dust, the effect of which is to blanket and limit the extent of the explosion.

An exhibition device shows the distribution of the losses that occur in burning coal in various types of boiler furnaces and tends to illustrate the need of methods of minimizing the losses of fuel which now total many millions of dollars a year.

The complex operations which take place in the iron-blast furnace are shown by a profile chart and flow sheet combined. There are exhibits of typical

strata of carnotite ore, the principal source of radium. Samples of all the known radium-bearing ores of the country are shown, also samples of the various commercial products of radium. The radium booth contains six spintharoscopes in which actual radium emanations may be viewed.

The motion picture booth illustrates the activities of the various government bureaus. A reel of pictures show demonstrations of explosibility of coal dust, rescue work and rescue car operation, first aid, etc.

An experimental metallurgical laboratory shows work in certain of the newer processes. Ores will be received from mines and will be crushed, sized, concentrated and smelted under the immediate direction of metallurgical engineers of the Bureau of Mines. The exhibit will illustrate methods of hydro-metallurgy or water separation, pyro-metallurgy or smelting, and electro-metallurgy. Work now being carried on in the chemical research laboratory of the Bureau of Mines will be transferred to this space.

The petroleum exhibit consists of pictorial display; geological display; statistical exhibit; library of petroleum literature; technological exhibit; a large collection of crudes and refined products; and an exhibit of housing and sanitary problems.

In the technological exhibit there will be shown full-sized drilling rigs in operation; transportation; tankage and storage problems will be demonstrated. A complete testing refinery will be constructed and through it will be run the crudes in carload lots, the resulting products from which will be available for use in the Machinery Palace.

The Demonstration Mine is an actual reproduction of full-sized entries, drifts, stopes and rooms, selected from typical mines in the United States. In the rooms of the Demonstration Mine are installed the machinery and appliances used in modern mining operations. Visitors will find here a model mine, designed and operated under such modern working conditions as are best calculated to assure the safety and health of the mine workers as well as efficiency of operation.

It is an exhibit of gold, silver, lead, copper, iron, hard and soft coal mining,

quarrying methods, mining machinery and equipment; and mine safety, rescue and first-aid work as arranged by the Federal Bureau of Mines to illustrate modern practices. This is done by reproducing the underground workings of some of America's most celebrated mines, including the actual ore, coal, mine timbering and machinery in place as in the original mines, and by means of motion pictures depicting mining operations, and by demonstrations of modern rescue and first aid methods at a vividly realistic explosion.

U. S. GEOLOGICAL SURVEY AT THE PANAMA-PACIFIC EX- POSITION

Among the various displays made in the United States Geological Survey's exhibit at the Panama-Pacific International Exposition, in San Francisco, will be two stage-like settings—partly model and partly painted—representing before and after development of a district in the arid west. In the before-development scene topographic engineers are at work with their instruments on the headlands, geologists have stripped a bed of coal and are taking samples for analysis, other geologists are studying rock-formations, an automatic river-gage is in the foreground, a hydrographer is measuring the flow of the stream nearby, and a camp and pack-train is seen in the background.

The same district after development is shown in the second scene. A power plant in the distance testifies to the results of the stream gaging, the knowledge of which has been utilized in planning the plant, and also an irrigation project that now covers the valley floor. A coal bed is being mined, an oil field with derricks is under development, a sandstone bed is being quarried, and mining and milling are in progress in the mountains. Progress is further evidenced by a town, road and railroads.

The work of the U. S. Geological Survey is essentially pioneer work. It prepares the way for the engineer and the constructor, and when these latter appear on the ground and results of the work of the Bureau are apparent its men have moved on to other and newer fields.

PENDING STATE LEGISLATION

The following legislative measures of interest to the mining and metallurgical industries are now receiving consideration in the several State legislatures:

Arizona.—House Bill, introduced by Mr. Farrell, amending the existing statutes relating to liens on mining claims and mines and exempting claims under lease and bond from the provisions by complying with prescribed conditions. The bill provides that the provisions of the law shall not apply to any mine or mining claim working under lease, bond or option by other than the owner when the owner shall have filed with the county recorder a notice to the effect that the mine or mining claim will not be subject to such lien or the owner responsible for any debts of those working the mine or mining claim.

Colorado.—House Bill No. 176, introduced by Mr. Dailey, providing for the safety of persons employed in and about coal and metalliferous mines, and providing for the examination of persons seeking employment therein, in order that only competent persons may be employed as miners, establishing the boards of county commissioners of the various counties as boards of examiners for this purpose, and providing penalties for the violation of the act.

House Bill No. 68, introduced by Mr. Staley, appropriating for the further equipment and operation of the experimental ore dressing and metallurgical plant at the Colorado School of Mines at Golden.

House Bill, introduced by Mr. Roberts, providing for safety gates on cages in the mines.

House Bill No. 100, introduced by Mr. Weiss, same as House bill introduced by Mr. Roberts.

Senate Bill No. 100, introduced by Mr. Lines, amending act providing for inspection of kerosene, gasoline and similar products.

House Bill No. 177, introduced by Mr. Drake, determining and defining relations between employers and employes, establishing an industrial commission, insurance, compensation, etc.

House Bill No. 176, introduced by Mr. Saily, providing for the safety of persons employed in and about coal and metalliferous mines, providing for examination of persons seeking employment therein in order that only competent persons may be employed as miners, establishing boards of county commissioners for the various counties as boards of examiners, and providing penalties for violation

House Bill, No. 157, introduced by Mr. White, providing for sprinkling devices in mines to overcome dust made in handling ores and in the operation of power drills.

House Bill No. 156, introduced by Mr. Tonge, amending the mining tax act.

House Bill No. 155, amending the act providing a lien for miners, millmen and others furnishing materials for miners and mills or either of them.

Idaho.—House Joint Memorial No. 2, introduced by Mr. Kribs, memorializing and requesting Congress to amend act or ruling of the Land Office under date of June 7, 1909, in such form and manner that the agricultural lands within Yreka Mining District, Shoshone County, Idaho, be so segregated that the rights of prospectors and miners may be conserved and protected. The Land Office ruling referred to set aside by the government and designated as agricultural lands a considerable portion of the district mentioned. The memorial recites that prospectors and miners have for years been locating and recording mining claims and properties and are now engaged in prospecting and developing mines and mining properties and have spent much money in improvements; it also recites that unless some action is taken promptly by the United States government, looking to the proper classification and segregation of the lands in the mining district designated "Agricultural," that great and irreparable injury will be done to the mining men interested in that district.

House Bill No. 151, introduced by Mr. Conner, providing for the protection and safety of workmen and for the inspection and regulation of all places of employment in all hazardous works and occupations, providing a schedule of compensation for injury or death and prescribing the liability of employers who elect not to pay such compensation, establishing an industrial accident board, defining its powers and duties and providing for a review of its awards. The bill provides for compensation for temporary disability and total disability and for compensation to dependents in the case of fatal injury. A schedule of compensation, based on the average weekly wage, is provided for in cases of disability because of injury for loss of members and for death. State insurance is provided, the rate of insurance being based on the character of the hazard. Employers are prohibited from deducting any part of the insurance premium from the wages or earnings of workmen. Employes, however, may contribute to a hospital fund. Reports of all accidents must be made by employer to the accident board.

Indiana.—Senate Bill No. 136, introduced by Mr. Kolsum, creating a commission to codify the laws on mines and mining and providing

for the appointment of the members of the commission.

Iowa.—Senate Bill introduced by Mr. Whitmore, providing that the expense of shot-firers now borne by the miners shall be transferred to the coal companies.

Other Iowa legislation of interest to the mining industry includes a state insurance bill, calling for the establishment of a commission to administer the state insurance fund. The Iowa Supreme Court is expected to hand down a decision on the validity of the present act during the month.

The miners propose introducing a bill or bills, providing for the installation by mining companies of wash-houses, also a bill calling for an examining board before which all miners must pass an oral examination before being permitted to work in the mines.

Kansas.—House Bill No. 626, introduced by Mr. Bird, repealing the act creating the school of mines and metallurgy at Wier.

Michigan.—Senate Bill No. 2, introduced by Mr. Wood, creating a commission to be known as the Michigan Securities Commission, to be made up of the Commissioner of the State Banking Department, the State Treasurer, and the Attorney General, to pass upon securities offered for sale. Exemption is made in the case of governmental and municipal securities, listed stocks and bonds, securities of state or national banks and trust companies, building and loan associations of the State, mortgages, unsecured commercial paper, etc. The commission provided for is to succeed the Michigan Securities Commission created in 1913.

Senate Bill 66, introduced by Senator DeLand, provides for workmen's compensation for injury or death; establishes an industrial accident board; defines its powers and provides for a review of its awards. The bill provides that no compensation shall be paid for an injury incapacitating the employe for less than two weeks, compensation to begin on the fifteenth day after the injury. Disability for four weeks or longer entitles injured employes to compensation from the date of injury, provides for compensation to dependents of deceased employes, for loss of physical members; compensation to be based on average weekly wages.

Senate Bill No. 70, introduced for Senator Hilsendegen by Senator Ogg, providing for a board of mediation and conciliation, prescribing its powers and duties and providing for arbitration in the settlement of differences between employer or employes, the provisions of the act applying to railroads, mines and public utilities. Request by either party to a controversy shall receive attention at the hands of the commission, which shall use its best efforts to bring about agreement. In case of a failure to bring about an amicable settlement controversy may be submitted to

the arbitration of a board of four persons, one each to be selected by the parties to the controversy and two to be selected by the arbitrators thus chosen.

Missouri.—House Bill No. 14, introduced by Mr. Correll, providing for the installation by owners or operators of all coal mines wherein ten or more miners are employed in digging coal of suitable buildings of sufficient size to accommodate all the men employed in the mines, the location of the buildings to be convenient to the principal entrance of the mines and provided with individual lockers, proper light, heat, hot and cold water and shower baths, and to be maintained in good, sanitary condition and order for the use of employes. Baths and lockers for whites and negroes must be separate, but may be in the same building. Employes shall furnish their own towels, soap and locks for lockers. A penalty of not to exceed \$200, or imprisonment is provided for violation of the act. Each week of failure to comply with the provisions constitutes a separate offense.

House Bill No. 595, introduced by Mr. Cook, giving the chief state mine inspector and his assistants the power and making it their duty to stop the operation and close any mine or part where poisonous damps exist, where rotten ropes or unsafe cages are used or where a safe escape way is not provided for all employes. A fine of not to exceed \$100, or imprisonment of not to exceed ninety days, or both fine and imprisonment, is provided for each separate violation of the act.

Senate Bill No. 245, introduced by Mr. Moore, the same as House Bill No. 14, introduced by Mr. Correll, with the exception that strip-pit or steam shovel coal mining is exempt from the provisions, and that the passage of the act is stated to be necessary for the immediate preservation of the public health and safety, and therefore not subject to the referendum provisions of the constitution.

Senate Bill No. 293, introduced by Mr. Morton, the same as House Bill No. 595, introduced by Mr. Cook.

Montana.—House Bill No. 100, by Mr. Mackel, making it incumbent on all persons, firms or corporations offering employment where a strike or industrial dispute exists to so state in the advertisement or notice wherein the persons wanted are to be employed whenever such is the fact. Violation of the act is made punishable by imprisonment in the county jail for a term not to exceed six months, or by a fine not to exceed \$500, or both.

House Bill No. 20, introduced by Mr. McNalley, providing that every employer of labor, agricultural excepted, shall make wage payments at least twice each month. Discharged employes shall receive wages due within forty-eight hours after having been discharged. Violation of the act carries with it a penalty of not to exceed \$200 for each offense.

House Bill No. 43, introduced by Mr. Kiley, providing that it shall be unlawful to coerce or compel any person into a written or verbal agreement not to join or become a member of a labor organization or any organization of a like character, or to coerce membership in a labor organization as a condition of his securing employment or continuing in employment. A penalty of not to exceed \$100 or jail imprisonment of not more than 30 days or both fine and imprisonment is provided.

House Bill No. 233, introduced by the Judiciary Committee, providing that in an action to recover damages for personal injury the court may order a physical examination of the injured person by competent physicians or surgeons who may testify as witnesses in the action. Disregard of an order of the court as to such examination shall constitute contempt of court. The fees of the physicians or surgeons who may testify as witnesses in by the party or parties applying for the examination and shall not be made a part of the costs of the action.

House Bill No. 157, introduced by Mr. Coiners, requiring coal mine operators to furnish shot-firers.

Senate Bill No. 52, by Mr. Kane, providing for compensation for injured workmen and for their dependents where injuries result in death, creating an industrial insurance department providing for care of injured workmen, providing penalties for non-observance of regulations for prevention of injuries and other violations of the act, asserting the police power, and, except in certain cases, abolishing the doctrine of negligence as ground for recovery of damages, and depriving courts of jurisdiction of such controversies.

The bill recites that the State of Montana, exercising its police and sovereign power, "declares that all phases of the premises are withdrawn from private controversy and sure and certain relief for workmen, injured in extra-hazardous work, and their families and dependents is hereby provided regardless of questions of fault and to the exclusion of every other remedy, proceeding for compensation, except as otherwise provided in this act; and to that end all civil actions and civil causes of action for such personal injuries and all jurisdiction of the courts of the state over such causes are hereby abolished, except as in this act provided.

Any such cause of action assigned to the state may be prosecuted or compromised by the industrial insurance department. The rate of contribution to the department funds shall be determined by the department according to the hazardousness of the employment, the insurance to be paid by the employer, being calculated upon his estimated payroll before commencing operation. Adjustment shall be made on or before January 2 of the following year. The bill makes it unlawful for the employer to deduct any part of the premium from the wages or earnings of his workmen. A schedule of compensation is made a part of

the bill, payments being made for partial disability, permanent disability, loss of members and to dependents in cases of fatal injury. Wherever there is injury to a workman because of the absence of any safeguard or protection required by law, the employer shall put into the accident fund, in addition to the sum required, 50 per cent. of the amount paid on account of such injury. Medical, surgical and hospital services at the cost of the employer, not to exceed \$7.50 per week, are provided for a period not exceeding twenty-one days. It is obligatory on the employer to see that immediate medical and surgical services are rendered and transportation to hospital provided. Employers must report all accidents, failure to do so being subject to a fine of \$500. Interstate or foreign traffic is excepted. A court review of any decision by the department is allowed any employer, employee or beneficiary who desires such review. The industrial insurance department is to consist of three commissioners at a salary of \$3,000 each.

Senate Bill No. 74, by Mr. Hogan, providing for the protection and safety of workmen, the inspection and regulation of places of employment in all hazardous works and occupations, providing a schedule of compensation, and prescribing the liability of employers who elect not to pay such compensation, and establishing an industrial accident board. The bill provides that the Commissioner of Labor and Agriculture, the State Auditor, and one member to be appointed by the Governor, shall act as the industrial accident board. Negligence of the employee shall not be regarded as a defense, unless such negligence was wilful, neither shall it be a defense that the injury was caused by the negligence of a fellow employee, or that the employee had assumed the risks arising from the failure of his employer to make proper safeguards. Household or domestic servants, those engaged in agricultural pursuits and those whose employment is of a casual nature, are excepted. Assessments of employees for hospital contracts or benefits are allowed, the assessment being limited to \$1.00 a month for each employee, except in cases where the actual cost of hospital service exceeds the amount. The bill prescribes a schedule of compensation. Employers are permitted to make payments direct to employees in case they do not elect to come under the provisions of the act. Employer's liability insurance is allowed. Safety provisions are made mandatory and penalties for neglect are prescribed.

House Bill No. 142, by Mr. Burnett, requiring pitfalls, wells and shafts not safely guarded or protected by proper enclosures, to be filled or covered to avoid danger to live stock. Where such dangerous openings exist the road supervisor may fill or cover and assess the cost against the real estate of the owner. A penalty not to exceed \$100 is provided for neglect to have openings filled after notice has been given.

House Bill No. 186, introduced by Mr. Bom-

part, creating the department of emergency state police and defining its powers and duties. The bill provides that the governor may designate sheriffs, deputy sheriffs, all members of the game warden's department, all stock inspectors, police officers and deputy sealers of weights and measures and other peace officers to act under the direction of a superintendent. They shall serve without additional pay other than necessary traveling and other maintenance expenses. Whenever, in the judgment of the governor, an emergency exists and the public peace and welfare demand it, the superintendent can assemble such members of the state police department as he may deem necessary.

House Bill No. 182, by Mr. Kelly, same as Senate Bill No. 52, by Mr. Kane.

New Mexico—Senate Bill No. 13, introduced by Mr. Pankey, amends provisions of present law relating to shot-firers to exempt anthracite mines which do not generate inflammable gas.

North Dakota—Senate bill, introduced by Mr. Lentz, providing for an appropriation of \$29,000 for the School of Mines at Hebron, \$8,000 of the amount to be used in constructing an addition to the present building.

Oklahoma—Senate Bill No. 219, introduced by Mr. Cordell, requiring county clerks to strike from the records oil, gas and mining leases upon which no work has been done and the terms of which have not been complied with.

Oklahoma—House bill, introduced by Mr. North, same as Senate Bill 219, introduced by Mr. Cordell.

Oklahoma—Senate Bill No. 194, introduced by Messrs. Fields and Moore, appropriating for extension work in zinc and lead mining districts.

Oregon—Senate Bill No. 8, introduced by Mr. Dimick, providing for a commission for the government of the Oregon Bureau of Mines, providing for the appointment of a director, defining his powers and duties, permitting cooperation with Federal bureaus and those of other states in furthering mining, providing for the publication of the findings, investigations, reports and statistics compiled by the bureau, providing for the collection of exhibits of natural resources of Oregon and authorizing entrance upon private lands in the prosecution of the work of the bureau. The proposed bill is an amendment to the existing law, establishing and creating the Oregon Bureau of Mines and Geology.

Senate Bill No. 38, by Mr. La Follett, amending the existing workmen's compensation act and providing for the creation of a fund to be known as the industrial accident fund.

Senate Bill No. 4, introduced by Mr. Barrett, creating a department of labor to incorporate therein the public duties now per-

formed by the Labor Commissioner, the industrial welfare commission, the industrial accident commission, and the board of inspectors of child labor, providing for two directors of the department at an annual salary of \$2,500 each, continuing the present labor commissioner as one of the directors during the term for which he has already been elected, and providing for an appointment of another director until the next general election. The two directors shall perform the duties now performed by the commissions named, the term of office to be four years. The terms of office of the industrial welfare commissioner, the industrial accident commissioner, and the board of inspectors of child labor will be terminated in the taking effect of the act.

Utah—Senate Joint Memorial No. 1, introduced by Mr. Dern, memorializing and urging Congress to enact the Foster bill providing for the establishment and maintenance of mining experiment and mine safety stations for making investigations and disseminating information among employes in mining, quarrying, metallurgical and other mineral industries.

The reasons given in the memorial for urging the passage of the bill are that it will improve conditions in the industries mentioned, safeguard life among employes, prevent unnecessary waste of resources, and otherwise contribute to the advantage of these industries.

The memorial states that "the proposed legislation will make commercially valuable large bodies of low-grade ores which cannot now be worked for want of suitable processes." The memorial further recites that "the mining industry has hitherto not received from the Federal government the recognition and aid that its importance deserves, and has therefore been deprived of the encouragement which has proved so wise and beneficial in the case of agriculture;" also, that it "will broaden the scope of the United States Bureau of Mines and will enable it to undertake much needed work in the behalf of metalliferous mining, instead of being practically restricted to coal mining as heretofore," and, "these enlarged activities of the Bureau of Mines are confidently expected to result in incalculable public benefit, not only to the mining states, but to the entire nation."

Senate Bill No. 15, by Mr. Dern, to require the recording and reporting of industrial accidents. The bill provides that every employer of labor, except agricultural or domestic, shall keep a record of every accident sustained by an employe in the course of his employment. Reports must be made to the Commissioner of Immigration, Labor and Statistics within forty-eight hours after the accident, giving full data concerning the injury. Subsequent reports of the results of the accident and of the condition of the injured employe shall be made by the employer at such times and containing such information as the Commissioner of Immigration, Labor and Statistics may re-

quire. Neglect to report accidents carries with it a penalty of from \$10 to \$200 for each offense.

Senate Bill No. 40, by Mr. Rideout, prescribing the liability of an employer to make compensation for injuries received by an employe in the course of employment, establishing an elective schedule of compensation and regulating procedure for the determination of liability and compensation thereunder.

When personal injury is sustained by any employe through an accident arising out of and in the course of his employment, where there is negligence on the part of the employer, the employe shall receive compensation, provided the employe was himself not wilfully negligent at the time of receiving such injury.

The right of compensation will not be forfeited upon the ground that the injury was caused in any degree by the negligence of a fellow employe.

Contracts entered into by an employer with an independent contractor to do part of such employer's work, or contracts by a contractor with a sub-contractor to do all or any part of such work, shall not bar the liability of the employer for injury caused to an employe.

The burden of proof to establish wilful negligence in the injured employe shall be upon the defendant. A schedule of compensation based on wages received at the time of injury is a part of the bill. Temporary disability, total disability, loss of life, and loss of members are provided for in the schedule. Death compensation is computed on a graduated basis, based on the number of dependents, the per centum of wages running from 35 to 60, according to the number of those left dependent. Exception under the schedule is made in the case of alien dependents not residents of the United States. The employer shall furnish reasonable medical and hospital services and medicines during the first two weeks after the injury, and, when needed, not to exceed \$50 in value.

Utah—House Bill No. 147, introduced by Mr. Fitch, making it incumbent on operators of all mines employing twenty-five or more men underground to provide and keep in a readily accessible place at least two fire-fighting helmets; also to provide training for a crew in the use of the helmets, and for tests at least once monthly in the use of the helmets. Mines employing forty or more men underground shall be equipped with two smoke helmets of a design to be approved by the state mine inspector, and for every additional fifty men shall provide an additional smoke helmet. Mines employing twenty-five or more men underground shall be equipped with one resuscitating apparatus, a suitable

supply of auxiliary apparatus and complete first-aid-to-the-injured outfit; all coal mines employing twenty-five or more men shall be supplied with four safety lamps, four electric hand lamps, and four masks or helmets, provided with a supply of oxygen or air sufficient to sustain respiration for the user for at least one hour. The state mine inspector and his deputies are authorized to inspect all first-aid equipment at the mines, and where such equipment is found faulty or defective to notify those in charge to repair equipment and place in good order. Twenty-five thousand dollars are to be appropriated out of state funds, or as much as is necessary to be used in equipping the mines of the state in the interest of Safety-First to the miners. Violation of the act is constituted a misdemeanor.

Utah—Senate Bill No. 120, introduced by Mr. Wight, amending the act fixing the hours of employment in mines, smelters and works for the reduction of ores to provide that in any such reduction or refining works using a wet process for the reduction or refining of ores or metals, workmen may, if they so elect, work not to exceed ten hours per day whenever the employment of other men working underground is dependent upon the operation of such reduction or refining works such additional time; and further providing that the wages for extra work shall not be less than one-eighth of the uniform wage paid for like work in the same locality. The present law limits the men to eight hours. The bill has passed the State Senate and is expected to be passed by the House. It has the endorsement of the miners as well as the operators.

SAFEST ELECTRIC RAILWAY

The Boston Electric Railway has received the American Museum of Safety award for being the safest electric railroad in the United States during 1914. The annual giving of medals to the American electric railway company which for the year of the award does the most to conserve the safety and health of the public, is one authorized by the family of the late Anthony N. Brady. Three medals are given, one of gold to the company, one of silver to the member of the operating staff who has most contributed to the successful record of the company, and one of bronze to the employe whose services have been of greatest value in the promotion of safety and health.

TESTIMONIAL TO DOCTOR DOUGLAS

At an informal luncheon, given at the Engineers' Club, in New York city, February 17, Dr. James Douglas was presented with a certificate of honorary membership in the American Mining Congress, which was voted to him at the Phoenix convention of the Congress.

The directors are permitted by the by-laws to bestow this testimonial upon one person each year. The privilege, however, has been exercised but four times during the fifteen years since the organization was created.

In presenting the certificate, Mr. Carl Scholz, president of the Congress, paid tribute to the many activities in which Dr. Douglas has been successful and to the wealth of friendship and esteem which has been earned by the courteous and sympathetic characteristics which have so endeared Dr. Douglas to the mining profession. Further expressions of esteem were voiced by Dr. George Otis Smith, of the United States Geological Survey, Acting Director Van R. Manning, of the United States Bureau of Mines, Mr. Horace V. Winchell, of Minneapolis, and Dr. A. R. LeDoux, of New York city.

One incident, related by Dr. LeDoux, is worthy of special mention, revealing, as it does, a phase of character not so generally known, perhaps, as some others, and yet just such a trait as one might expect to find in one who has at all times been ready to extend help to those needing assistance and who has always furnished inspiration to better effort through the example of his life. Describing a trip with Dr. Douglas, made for the purpose of examining a mining property, Dr. LeDoux told of their coming to an open cut which revealed a number of toads which had fallen to the bottom. Here they were imprisoned, unable to escape. Dr. Douglas stopped the party while he improvised a ladder to reach the bottom of the cut, and there, with his own hands, lifted the toads to the surface, where their means of continued existence was available.

Those present at the luncheon were Mr. W. L. Saunders, president of the American Institute of Mining Engineers; Mr. Carl Scholz, president of the American Mining Congress; Messrs. M. S. Kemmerer, of New York; Samuel A. Taylor, of Pittsburgh; Hennen Jennings, of Washington, D. C., and E. A. Montgomery, of Los Angeles; directors of the American Mining Congress; Mr. J. F. Callbreath, of Denver, secretary of the Mining Congress; Dr. George Otis Smith, of the United States Geological Survey; Mr. E. W. Parker, of the United States Geological Survey; Mr. Van H. Manning, of the United States Bureau of Mines; Mr. Sidney J. Jennings, of New York; Mr. Horace V. Winchell, of Minneapolis; Mr. E. B. Kirby, of St. Louis; Dr. W. R. Ingalls of the *Engineering Mining Journal*; and Messrs. Karl Eilers, Bradley Stoughten, John H. Janeway, Dr. Albert R. LeDoux and Mr. Archibald Douglas, of New York.

WATER IN MINES

One of the factors operating to make the mining of anthracite continue to be more expensive is the pumping and hoisting of water from the mines. The quantity of water that must be pumped and hoisted out of the anthracite mines of Pennsylvania has increased 10 per cent. in the last ten years, and will continue to increase. It is estimated that every ton of coal removed from the mines involves the removal of a ton of water every year thereafter so long as the mine is operated. The present capacity of the pumps in use at the mines is given as 1,037,009 gallons per minute. The quantity of water actually delivered at the surface in 1914 is estimated at 489,600 gallons per minute, or about 250,000,000,000 gallons a year. The extra capacity of the pumps is necessary in times of extra heavy flow of water.

THE ADJUSTMENT OF INDUSTRIAL DISPUTES AFFECTING THE PUBLIC SERVICE

BY HON. JAMES A. EMERY, WASHINGTON, D. C.

Address Before the Seventeenth Annual Session of the American Mining Congress, Phoenix, Arizona, Dec. 7-11, 1914.

Ever since the organization and report of the Anthracite Coal Strike Commission in 1902, an increasing amount of thought has been given to practical methods of settling the enormously destructive and wasteful industrial controversies which at times, paralyzing industry and transportation, have frequently caused incalculable economic loss; not only greatly injuring and sometimes ruining individuals, but obstructing or stopping service upon which the public is dependent for daily necessities. The Lemieux Act, Canada's legislative experiment with this problem, has been the subject of much discussion in our own country. It does not deny the right to strike or lockout, but endeavors to compel the parties to the controversy to submit their differences to an arbitration, the findings of which either or both may subsequently reject but without which neither may legally strike or lockout. It is contended by the Canadian authorities and by many shrewd observers that the act has a valuable moral effect. Although it is admitted that in the final test it is incapable of practical enforcement, since events have demonstrated that government could not, without civil war, undertake to confine a labor organization and its sympathetic supporters who struck in disobedience of the law. But the law and the public opinion which it developed have undoubtedly had the notable moral effect of decreasing trivial strikes and causing both parties in controversies to think before acting. The principle of the Canadian Act cannot, however, be applied to private industry in our country under our organic law. It would create a condition of "involuntary servitude."

The mere stoppage of private industry, however serious to those involved, does not represent the form of strike most injurious to the public. We suffer from notable strikes, or threats of strike, not only on interstate railroads but on the various traction systems upon which cities, great and small, and their suburban communities which have grown up about them, are absolutely dependent not only for daily transportation from residence to work, but for a continuous supply of the necessities as well as the conveniences of daily life. The suspension of such service is a community disaster, sometimes equal in the loss, suffering and inconvenience which it entails to the stoppage of the local light or water system. What is true of such a community catastrophe is true in a larger way not only of the great transportation systems, but of a few industries producing the fundamental necessities of life.

In purely private employment, these deliberate and concerted stoppages of industry, while often entailing great losses to both parties, are nevertheless the inevitable incident of the exercise of elementary private rights. The state can neither compel individuals to give work nor others to take it. The losses directly and indirectly suffered, however deplorable, are but incident to the exercise of personal rights, which, however directed by bad judgment, are part of the tax paid for the preservation of individual freedom, but when the service of a corporation or business becomes wholly affected with the public interest or dominated by that feature so that its uninterrupted operation is essential to well-being or the life of the community, is it not a question whether corporations or

large groups of individuals organized for the furtherance of their private interest, may not have their collective or individual contract of service controlled and regulated to protect the interest of the public?

It is not suggested that any individual or combination of individuals can be compelled to remain at work, but in view of the public character of the service rendered, may the state recognize and enforce, under penalty, a contract of service by which the individual employed by a public utility and the public utility itself, each under appropriate penalty, agree that the one will not lock out its employees, nor the other become party to a collective movement to paralyze the public service by quitting until the issues relating to conditions of employment have been passed upon by some impartial tribunal constituted by the parties. Such a contract, viewed from the standpoint of the employer operating the public utility, means that he agrees by virtue of the franchise which he receives and the character of his relations to the community, that he will condition his freedom of action by agreeing in his franchise not to do that which will deprive the community of his service. The individual or organized employe is free to make or reject the contract offered. He is not compelled to enter into the service of the public utility, but having done so, he conditions his quitting by voluntary contract made in view of the character of the service rendered. Would such a contract make either party sustain any involuntary relation with the other? Would not the condition attached to the contract be one justified by the character of the service rendered and the public interest involved? For any form of arbitration which compels either party to continue to sustain a relation created without preliminary condition, there can be found but little defense. Private employment, least of all, discloses any condition which would sanction it. The issue here presented is whether or not the interest of the public in the continued operation of a utility privately owned and operated,

but dedicated to a public service, is so dominant in the light of existing social conditions and necessities that its voluntary contracts of employment may and ought to be so conditioned.

The discussion may well proceed within a very narrow range of obvious public utilities. The principle, once recognized, is capable of transfer, always within rational limitations, to other spheres of like action. Within such limits, is the application of the principle suggested desirable? It is obvious that it does not apply to all fields of industrial controversy, nor can any remedy hope to, but would it not ameliorate and greatly modify the conditions which too frequently exist in a vast and immediate field of necessary activity? Too frequently, in discussions of these problems, we undertake to cover too great an area of disturbance. A sound principle, rationally applied, within practical limits of immediate need and recognized authority is a more profitable subject of discussion than the extension of untried and unprecedented proposals to the widest areas of disturbance. Sufficient for the day is the problem thereof.

UNITED MINE WORKERS

A five-days' session of the International Board of the United Mine Workers of America was held at Indianapolis, beginning February 2, routine matters affecting the organization being considered. The outcome of the election for the three principal international officers was announced, the terms being for two years. President John P. White and Vice-President Frank J. Hayes were re-elected without opposition. Secretary-Treasurer William Green was again elected, receiving 122,768 votes to 45,378 cast for W. L. Simms, of Linton, Ind., his opponent for the place. An audit of the books of the United Mine Workers showed a balance in the treasury December 1, 1914, of \$110,938.66. The balance in the treasury on December 1, 1913, was \$218,032.30.

COMPULSORY ARBITRATION

BY SAMUEL O. DUNN, CHICAGO, ILL., EDITOR OF THE RAILWAY AGE GAZETTE.

Address Before the Seventeenth Annual Session of the American Mining Congress, Phoenix, Arizona, December 7-11, 1914.

The president of the American Mining Congress has asked me to write a paper on compulsory arbitration, and especially to indicate my opinion as to the advisability of advocating some method of bringing about such arbitration, or as close an approximation to it as would be practicable under our existing form of government. I regret that I have not had opportunity, since I consented to write something on this subject, to get together a larger amount of material and to put my thoughts in satisfactory form. All I can do is to outline the experience of a few countries with different forms of conciliation and arbitration, and indicate in a general way the conclusions which it would seem we may reasonably draw from their experience as to the form of governmental action regarding labor disputes which would be the most practicable and expedient under the conditions prevailing in the United States.

Governmental intervention in disputes between some classes of employers and employes is a natural result of the development of modern industry. When industries were small, and there were no large organizations of employers or employes, the public had little interest in controversies between labor and capital. The number of men employed by any person or concern was insignificant, and it made little difference to the public if there was a lockout or strike.

Owing to the course of industrial development there are now many concerns which employ thousands of men. In certain lines of industry there are organizations including many business concerns, on the one hand, and the employes of many concerns, on the other hand. A lockout or strike in one of these large concerns or lines of industry may result in many millions of capital and many thousands of men being rendered idle.

This has given the public a proper and important interest in disputes between capital and labor which it did not formerly have. The public feels concern regarding the economic waste that will result from such large investments and so many productive workers being rendered idle. It feels a special concern regarding the possibility of lockouts or strikes in certain industries because they would cut it off from the very necessities of life.

The situation as respects industries producing something or rendering some service the unbroken production or rendering of which is not essential to the public welfare is entirely different from the situation as respects industries producing something or rendering some service the unbroken production or rendering of which is essential to the public welfare. The public would not feel immediately and acutely the effect of the closing down of the steel mills, for example. It would feel more speedily and keenly the effect of a complete closing down of the coal mines, especially if this occurred in a season when the demand for coal was great. Still more keenly and acutely would it suffer from a serious interference with the operation of the railways, for under conditions of modern civilization an interruption of railway service would soon arrest most of our industrial and commercial operations, and menace with starvation the entire population of many communities.

Whatever may be true as to industries on which the public is not dependent for necessities of life, it seems to be perfectly clear that the government has the right and duty to take whatever steps may be necessary in order to prevent serious interferences with the production of commodities or the rendering of services on which the comfort, the welfare

and even the life of the people are dependent.

A distinction is drawn in law between public utilities and other concerns, this distinction being based on the theory that the operation of only the former is of primary importance. It would seem that under modern conditions the uninterrupted operation of coal mines is almost, if not quite, as important to the public as the unbroken maintenance of the service of public utilities and railways, and that, therefore, there is as much justification, economic and moral, if not legal, for government interference in disputes between coal mine operators and their employes as between railways and public utilities and their employes.

Whether this interference should take the form of compulsory arbitration seems, however, very questionable. Compulsory arbitration involves, first, compelling the parties to submit their differences to arbitration, and, second, compelling them to accept the award made. This is merely a modified form of slavery. To require capitalists to give employment to men or bodies of men whom they do not want, at wages which they do not want to pay, or to require an individual workingman or a body of workingmen to work for concerns for which they do not want to work, at wages which they do not want to accept, is inconsistent with enlightened ideas of liberty. It is a form of industrial conscription and should not be resorted to except in cases as extreme as those which justify military conscription.

It is not necessary, if the government is to intervene in labor disputes, whether on railways or in coal mines, for it to go to the length of adopting compulsory arbitration. Furthermore, the experience of governments which have tried various forms of interference in such matters has indicated that attempts at compulsory arbitration are not likely to be successful and that other forms of governmental intervention are likely to be more successful and to produce more satisfactory results.

The government which has made the most thorough and interesting trial of compulsory arbitration is that of New Zealand. It passed a compulsory arbi-

tration law in 1894, entitled, "An act to encourage the formation of industrial unions and associations and to facilitate the settlement of industrial disputes by conciliation and arbitration." The original act and the various amendments were united into a compilation act in 1905 and various amendments have been passed since.

The act as it stood in 1905 provided for the registration with the Secretary of Labor of industrial unions and associations of either employers or workers. Registration made the union or association a body corporate and rendered both it and its members subject to the jurisdiction of a conciliation board and an arbitration court. Any industrial union might apply at any time for the cancellation of its registration, but such cancellation did not relieve the union or any of its members from the obligation of any agreement or award in force at the time, nor from any penalty or liability. The cancellation of registration on the part of the labor union removed it from the jurisdiction of the conciliation board and the arbitration court. But employers could not thus escape. They had to accept arbitration if their employes were registered and demanded it. Under this law, therefore, arbitration was, in a sense, voluntary for the workers but compulsory for the employers.

The colony was divided into eight districts in each of which there was a board of conciliation consisting of three or five members, one or two being elected by the unions of employers, an equal number by the unions of workers and the third or fifth member by the other members. The court of arbitration consists of three members, a president and two assessors, all appointed by the governor, on the recommendation of the unions of employers and of workers. An award binds not only labor unions but also all individual workers working for an employer on whom the award is binding. Unions of employers or of workers and individual employers are liable to fines not exceeding \$2,500, and individual workers to fines not exceeding \$50, for breaches of awards.

In practice the conciliation boards were practically ignored from the first.

and almost every case went before the arbitration court. In the absence of this legislation, which, it will be noted, applied to all classes of commercial and industrial undertakings, including agriculture, workmen would have looked to their employers for improvements in their conditions of work and raises in their wages. But because the law existed, almost every question regarding conditions of work and wages had to be settled by the arbitration court. The awards and agreements which have been made under it cover a great variety of subjects, including minimum wages, hours of labor, permits to incompetent workers, limitation of apprentices, periods of apprenticeship, piecework, distribution of work, holidays, meal hours, provision of tools, modes of payment, notice of dismissal, scope and duration of awards, interpretation of awards, extension of awards, breaches of awards, and fines.

In the earlier years of the operation of the act conditions in New Zealand were prosperous and the awards usually resulted in advances in wages. During this period compulsory arbitration was in high favor with labor. But when the earlier awards began to expire conditions were not so prosperous, and when the workers appealed to the court for further increases in wages these were often refused. Labor then speedily began to show dissatisfaction with the law and the court. This dissatisfaction finally manifested itself in an acute form. In November, 1906, disregarding the provisions of the law, the employes of the street railways of Auckland declared a strike. The men's grievance was that a conductor had been discharged for alleged misconduct. Both the company and the striking employes were fined for having violated the arbitration law. In February, 1907, there was another strike, this time in the meat packing houses at Wellington. In this case 266 strikers were fined \$25 each.

The next year there was a strike among the coal miners of the West Coast which lasted for eleven weeks. The men claimed that seven miners who had been dismissed had been discharged because they were active unionists and socialists. The company offered to take

them back, but the miners refused to work unless some arrangements were made to prevent similar occurrences in future, and offered the remarkable suggestion that when men were to be dismissed they should be selected by ballot! The union was cited before the arbitration court and fined \$375. Being unable to collect the fine from the union, the court proceeded against the men individually and collected about \$250.

These strikes were followed by others, and in September, 1908, the Minister of Labor reported that since 1906 there had been twenty-three strikes, that the total number of strikers had been 1,117, the number of men rendered idle 2,389, the duration of the strikes 317 days, the loss of wages to workmen almost \$90,000 and the loss to employers about \$80,000. The next year there was a coal mine strike for a very curious reason. A new workmen's compensation act was to go into effect. The coal mine operators wished to insure themselves against loss in the insurance department run by the colonial government itself. The government insisted that before it would write the insurance the employes of the mines must submit to physical examination; and the men struck rather than submit to physical examination. The government then yielded and authorized its insurance department to issue policies without examination. Soon afterward there was a strike of the miners in the government coal mines at Point Elizabeth.

The chief purpose of the arbitration law was to prevent lockouts and strikes. It had succeeded in preventing lockouts but had failed to prevent strikes. Therefore, it was amended on January 1, 1909, to provide that every worker who was a party to an unlawful strike should be fined not exceeding \$50 and every employer who was a party to an unlawful lockout should be fined not exceeding \$2,500. The boards of conciliation were abolished and councils of conciliation substituted. Three permanent commissioners of conciliation are appointed by the government. In case of a dispute one of them goes to the scene and tries to effect a settlement. If he fails, he sets up a council of conciliation consist-

ing of one, two or three assessors representing the employers and an equal number representing the workers. Every dispute must be referred to such a council before it can be carried to the arbitration court. There is, however, a way by which the workers may altogether evade the purpose of the act and strike without danger of punishment. After an award applying to them has expired they may cancel their registration, after which they cease to be subject to the law.

I have no detailed information on the subject, but I understand that the law as amended in 1909 has worked as badly as the original act and that strikes have continued to occur in New Zealand. In other words, compulsory arbitration there has failed to prevent strikes, and the government has not even been successful in all cases in enforcing the awards made by the arbitration court. In this respect, as in the ownership and operation of mines and railways, and in most other respects, paternalistic government in New Zealand has been very much less of a success than the advocates of similar government in this country would have us believe.

The British colonies have tried within the last two decades many experiments with social and labor legislation. That in New Zealand with compulsory arbitration is one of them. Another of the most interesting and instructive of them has been that made by our neighbor, Canada, by the passage and administration of the "Industrial Disputes Investigation Act," more familiarly known, after its author, as the "Lemieux Act." This measure is of especial interest to those engaged in the mining of coal because its enactment grew out of a coal mine strike in Lethbridge in the southern part of the Province of Alberta. This strike began in the summer of 1906 and continued until late in the fall, and the people of Western Canada suddenly awakened to the fact that on the verge of a northern winter they were confronted with the danger of a serious fuel famine. The strike was finally settled. But the impression made on the public mind was so deep that legislation to prevent the recurrence of such conditions

was passed and went into effect before the end of March, 1907.

The Lemieux Act applies to railroads, street railways and other public utilities and to mines of every class, metalliferous as well as coal. It provides that before a lockout or strike can legally take place in any of these industries the parties must refer their differences to a board for hearing. The party about to lockout or strike must give notice to the government of its intention, together with a statement of the nature of the controversy. The Minister of Labor then calls on each party to name a member of the board. The two members chosen by them are given an opportunity to agree on a chairman. If they fail to do so within a specified time, the Minister of Labor appoints the chairman; and if either party fails to name a member of the board to represent it, the Minister of Labor appoints him, also.

The board as thus constituted has almost the powers of a court. It may subpoena witnesses, compel the production of documents, and take testimony; but its duty is primarily that of a conciliation and mediation board. If the board can bring about a settlement by conciliation it prepares its report and sends it to the government. If it cannot do this, it takes testimony and prepares a report summarizing it, and also sets forth its conclusions as to the merits of the controversy and its recommendations to the parties and gives this report to the public.

There the intervention of the government ends. The law does not require acceptance of the award. According to all reports, this very simple measure has worked well. Hon. W. L. MacKenzie King, formerly Minister of Labor of Canada, delivered an address before the Railway Business Association in New York on December 19, 1912, in which he said that during the five and one-half years up to September, 1912, there had been 132 applications made for the formation of conciliation boards, and that strikes were averted in all but fifteen cases. Of these controversies, forty were in coal mines, ten in metalliferous mines, fifty-three on railways and ten on street railways.

The only similar federal law which we have in this country is the Erdman Act, as amended by the Newlands Act. This measure applies only to disputes between railway companies and railway employes directly concerned with the operation of trains. It creates a permanent mediation and conciliation board of three members. In case of a dispute which may lead to a lockout or strike, either of the parties may appeal to this board, which will then tender its good offices. But its advances may be legally repulsed, for, unlike the Canadian law, the act does not prohibit a lockout or strike in advance of conciliation or arbitration. If the good offices of the federal mediators are accepted they proceed to the scene of the controversy and try to bring about an agreement. If they are unsuccessful in this the law provides that the parties may resort to arbitration by a board composed of two representatives of the railways, two representatives of the employes and two other persons chosen by them. If the representatives of the railways and employes do not agree on the impartial arbitrators they may be selected by the board of mediation and conciliation. Once the controversy has been submitted to arbitration, the award must be accepted by the parties and put into effect for one year.

On the whole, the results of the operation of this act have been good. Mediation and arbitration under it have averted many serious strikes. But the law has grave defects. Why should it apply only to employes of railways directly concerned in the operation of trains? A strike in railway shops might in a very short time cause a serious interruption of traffic. And why should the law apply only to railways and their employes? A coal mine strike may cause as much loss and suffering to the public as a railway strike. Finally, why should lockouts or strikes be permitted on railways and public utilities and in coal mines before the questions in controversy have been submitted to somebody representing the public? The public has even more at stake than either of the immediate parties. May not the public, therefore, properly demand that at least all the facts shall be given to it before

its rights are disregarded and its interests sacrificed?

Another criticism which has been forcibly urged against the Erdman-Newlands law is that while conciliation and arbitration under it may prevent lockouts and strikes, they do not necessarily result in fair settlements. Of the six members of the arbitration board as now constituted, only two are in any sense impartial. The other four are avowed partisans. And the only two who are impartial are never experts, for they are always chosen from some business or profession entirely different from that in which the dispute has arisen. In these circumstances the award is necessarily made by the two impartial arbitrators, and, as they lack expert knowledge, and as the time allowed for the proceeding is short, the usual result is a mere splitting of differences, which settles no principles and always results in some increases in railway wages, whether fair or not.

The most thorough investigation of the railway labor situation in this country ever made was that of the arbitration board which settled the controversy between the eastern railways and their locomotive engineers some two years ago. This board was not organized under the Erdman Act, but was composed of one representative of labor, one representative of the railways and five impartial arbitrators, all of whom were very prominent business and professional men. So impressed was this board by the shortcomings of the Erdman Act and the dangers of serious railway strikes that it recommended legislation forbidding such strikes prior to arbitration and providing for federal and state wage commissions to deal with labor controversies on railways.

The most serious shortcoming of the Erdman-Newlands law is that it does not prohibit strikes and lockouts before arbitration; and the best feature of the Lemieux Act of Canada is that it does prohibit them before the facts regarding the questions involved have been given a thorough airing.

With your permission I shall suggest, with some diffidence, a plan for legislation which I believe would be better than

either the Erdman-Newlands Act or the Lemieux Act. The Erdman-Newlands Act should be so amended as to make it apply to both controversies between railways and any or all of their employes, and between coal mining companies and their employes. Whether its extension to disputes in coal mines would be constitutional is a question which I expressly refrain from discussing at this point. The present federal mediation and conciliation board should be retained with its present functions, but its jurisdiction should be extended in the same measure as the provisions of the law under which it acts. Strikes and lockouts in advance of arbitration should be prohibited in the industries mentioned. In case of arbitration the arbitration board should be composed of one representative of the employers, one representative of the employes, one member of the Interstate Commerce Commission, one member of the new Interstate Trade Commission, and a fifth member to be chosen by these four. The testimony taken by the board, together with its conclusions and recommendations, should be made public, but, as in Canada, the award should not be legally binding on the parties.

What would be the advantages of such legislation? It would provide machinery for governmental intervention by which agreements between the parties themselves might be brought about. It would prevent lockouts and strikes until after the facts regarding all the points in controversy had been laid before the public. It would secure arbitration by a board, a majority of whose members would represent the public, and which at the same time would be so constituted that we may fairly assume that it would act with expert knowledge. And after the parties had had time to think deliberately about the points in controversy, and after a board as thus constituted had ascertained the facts and presented them to the parties and made them public, together with its recommendations, it is almost inconceivable that any concern or body of workingmen would have the hardihood to reject the board's findings and recommendations and resort to a lockout or strike.

That such federal legislation would be constitutional as applied to railways there cannot be any serious doubt. Whether it would be constitutional as applied to coal mines is a different question. But if such federal legislation as to disputes in coal mines would not be constitutional, unquestionably similar state legislation would be so. Furthermore, similar state legislation applying to public utilities of all kinds would be constitutional.

Would not such regulation of the relations between capital and labor secure all of the advantages of compulsory arbitration and at the same time steer clear of its disadvantages? New Zealand has tried both compulsory arbitration and compulsory acceptance of awards. Canada has tried compulsory arbitration with voluntary acceptance of awards. Under the Erdman-Newlands Act we have tried voluntary arbitration with compulsory acceptance of awards. In my opinion the system which would be best suited to our own conditions and needs would be that of compulsory arbitration with voluntary acceptance of awards, carried out under some such plan as that which I have outlined.

John H. Robinson, the newly elected secretary of the Arizona Chapter of the American Mining Congress, was made the recipient of a very handsome Knights Templar ring and a gold chain by Yavapai County friends at Prescott on February 9. Mr. Robinson was formerly city clerk of Prescott and left that city to assume his new duties as secretary of the Mining Congress Chapter at Phoenix.

CORRESPONDENCE

UNIFORM MINING COMPANY REPORTS

PITTSBURGH, PA., Feb. 17, 1915.

MR. JAS. F. CALLBREATH, JR.,

Secretary American Mining Congress
Washington, D. C.

DEAR MR. CALLBREATH:

In connection with the Philadelphia meeting of the American Mining Congress, I read a paper on the number and variety of reports, both national and state, now required to be made by mining companies. In this paper,

as you will recall, I undertook to point out the slight differences in some of these reports as to the data required by them, and also the time at which they were required to be made. The discussion and consideration of this subject resulted in the recommendation that a committee of the Mining Congress be appointed to cooperate with representatives of the United States Geological Survey and the United States Bureau of Mines, with a view of standardizing these reports, both as to the data required and the time of making them.

Many things have conspired to prevent the carrying out of the suggestion made at that time, but now that the Mining Congress has embarked in the publication of a JOURNAL, the time seems propitious that through this medium we may be able to arouse the attention of those interested in this matter to the extent that they will lend their influence in assisting in the bringing about of a standardization of these various national and state reports as above outlined.

If this should meet with your approval, I should be glad to have this matter considered through the columns of the JOURNAL, or in any other way that will bring about the result, which is so much desired by all mining companies.

Yours very respectfully,

S. A. TAYLOR.

THE MINING CONGRESS JOURNAL

BISBEE, ARIZONA, Jan. 28, 1915.

DEAR MR. CALIBREATH:

The time has come when the public at large should be brought to realize the importance to our national life and prosperity of the mining industry of the United States. While agriculture is dignified by representation in the Cabinet and Congress appropriates large amounts each year for assistance and research, coal and metal mining have been shamefully neglected or unfairly treated through ignorance of their needs and ambitions. The reason for this is not alone the lack of personal representation in the Senate and House of Representatives, but rather the obvious lack of organization without which individual effort is usually futile and misunderstood. To obtain a respectful hearing and to exert influence commensurate with the importance of the object to be attained, it becomes essential that the mining industry should act as a unit and put its case squarely before the public

and trust to the inherent sense of fairness of the American people for a favorable decision.

THE MINING CONGRESS JOURNAL should serve as a means of doing this and as an open forum for discussion of subjects concerning legislative and social questions should, without infringing on the function of technical publications, be of great assistance to those interested in mining and instruction to the people at large. I, therefore, believe that through the publicity which the JOURNAL can afford to the important work being carried out by The American Mining Congress, great benefit to mining may result and our governing bodies be brought to a fair conception of the needs of the industry.

Yours truly,

WALTER DOUGLAS.

OHIO MINE SCREEN LAW CONSTITUTIONAL

The so-called Ohio mine screen law has been held to be constitutional by the United States Supreme Court in a decision handed down February 23. The law provides that miners shall be paid according to the weight of the coal within the car in which the coal is removed from the mine. Following the passage of the law, the coal operators brought suit, taking the ground that it was in violation of the Fourteenth Section of the Federal Constitution and that its enforcement was not within the police power of the state. The Federal Court for the Northern District of Ohio, to whom an appeal was made by the Rail & River Coal Co. against the Ohio Industrial Commission for an interlocutory injunction to restrain the industrial commission from enforcing this law, declined to grant the injunction. An appeal was then taken by the operators to the United States Supreme Court for a final decision as to the law's constitutionality.

About 10,000 acres of coal lands in West Virginia were exhausted during 1914.

KANSAS STATUTE INVALID

UNITED STATES SUPREME COURT RULES EMPLOYER MAY EXACT PROMISE TO FORSWEAR UNION

Second only in importance to the Danbury Hatters' case, as affecting the status of labor organizations, is the decision recently rendered by the United States Supreme Court in the case of T. P. Coppage, plaintiff in error, against the State of Kansas. The decision of the Kansas Supreme Court which had held the statute valid was over-ruled. The law in question made it a misdemeanor for an employer to require an employe to sign an agreement not to join a labor union during the term of his employment. Such a statute, the United States Supreme Court held, was unconstitutional, because repugnant to the fourteenth amendment to the Constitution in depriving a person of his liberty without due process of law. Many other States have practically the same law as the Kansas statute.

The court reached its conclusion by a divided vote. The opinion was read by Justice Pitney. Justices Day and Hughes concurred in one dissenting opinion and Justice Holmes dissented for other reasons. The majority opinion of the Supreme Court holds that the statute is void because an employer under the law would be deprived of his liberty. The employe was merely requested to choose whether he would give up his position of employment or would agree to refrain from the union if he were so employed.

The court in its opinion followed a previous decision handed down by Justice Harlan in another celebrated labor case (*Adair vs. U. S.* 203 U. S. 161), where it was held to be constitutional right of an employer to dispense with the services of an employe because of his membership in a labor union for the same reason that it is the constitutional right of the employe to quit the service of the employer who employs a non-union man.

The majority opinion recites that in

six States (including the Kansas court, in a previous decision) the same rule had been announced and that most, if not all of the States which have had statutes similar to those of the State of Kansas, have been held to be unconstitutional.

The court holds, as in the Danbury Hatters' case, that the law was made for all classes alike, and that a conspiracy in restraint of trade under the Sherman law was no less a conspiracy if practiced by a labor organization than if practiced by a combination of employers. In this case it holds that an employer does not violate the law by refusing to employ union men or by requiring men who seek employment with him to agree not to join a union.

The court holds an act may not be "coercion" simply because a body of legislators choose to designate it as such. The word "coercion" was used in the Kansas statute. The opinion also states that a statute cannot declare things criminal which are in truth essentially normal, constituting nothing more than an innocent exercise of personal liberty. The court holds that under the fourteenth amendment a State may not strike down personal liberty or property rights or restrict their normal exercise, except so far as is incidentally necessary for the accomplishment of some paramount object in promoting the public welfare. It holds that the legislature, under the guise of promoting the public welfare and claimed as the legitimate excuse for the exercise of police power, cannot restrict liberty or property rights.

The court discusses labor unions at length and holds there is nothing in its opinion inconsistent with the recognition of an individual to join a union. There is no intention, the court declares, to question the legitimacy of labor organizations so long as they conform to the law of the land.

MIDWEST OIL CASE DECISION

Of deep interest to all in the oil industry is the decision announced February 23, by the United States Supreme Court, in the noted Midwest Oil case, arising in Wyoming and involving title to mineral rights in millions of acres of oil lands in that state and in California. The question at issue, whether the President had the right, before the enactment of a special statute in 1909, to withdraw public lands from mineral entry, was upheld, the majority opinion being rendered by Justice Lamar.

The decision vitally affects vast oil interests in California and Wyoming. Titles claimed by more than 100 companies and individuals are made void by the decision and approximately \$40,000,000 in development work done on this land by entrymen is said to be forfeited to the Government.

The decision is expected to have an important bearing on a number of suits over Kern County oil lands and said to involve at least \$20,000,000 each, now on file in the United States District Court in Los Angeles.

The Midwest Oil case decision, government officials state, assures an adequate oil supply for the navy.

NORTHWEST MINING CONVENTION AT SPOKANE

Under the auspices of the Mining Men's Club, assisted by the Spokane Chamber of Commerce, the Northwest Mining Convention was held in Spokane, Washington, during the week of February 22. The technical program was in charge of the Spokane Engineering and Technical Association, assisted by the Spokane sections of the American Institute of Electrical Engineers and the American Society of Civil Engineers and Columbia section of the American Institute of Mining Engineers. The regular sessions of the convention were held on February 24-26, closing with a banquet on the evening of the 26th at the Spokane Hotel.

MONTANA'S METAL OUTPUT

As might be expected, the metal output of Montana for 1914 was seriously affected by the European war, Montana being notably a copper producer. The value of gold, silver, copper, lead and zinc from Montana mines decreased from nearly \$62,000,000 in 1913 to about \$48,000,000 in 1914, according to figures prepared by the United States Geological Survey.

The gold output was slightly over \$4,000,000, the best showing for seven years, being an increase of over 14 per cent over the gold yield in 1913. The production of silver in 1914 was about 12,000,000 ounces in 1914, against 13,819,201 ounces in 1913, a falling off of about 13 per cent.

The copper output decreased from 287,828,699 pounds to about 238,000,000, pounds, or over 17 per cent, and in value from \$44,613,448 to about \$31,300,000. This copper decrease was general from August to December. The industry was not only hampered by curtailment due to reduced market and lower metal prices, but also by labor difficulties.

The lead yield increased from 10,935,827 pounds in 1913 to about 15,000,000 pounds in 1914.

Montana produced over 120,000 tons of zinc sulphide concentrate in 1914. In 1913 the recoverable spelter production was 88,673,083 pounds, and this was increased to about 109,000,000 pounds in 1914, a gain of nearly 23 per cent.

CRIPPLE CREEK'S FINE SHOWING

Cripple Creek's mining output for January was the heaviest monthly yield for ten years. The total output was 75,650 tons of ore with a gross bullion value of \$1,621,884. The tonnage for December was somewhat greater, but the values for January were higher and in some instances far above the average. Cripple Creek is prophesying an output of at least \$20,000,000 for 1915.

The West Virginia Supreme Court of Appeals has recently ruled that the indicating of a purpose to surrender a lease and to make no further payments to the lessors by the lessee of coal and the subsequent failure of the lessee to make further payments does not establish a surrender. The president of a corporation, as such officer, has no implied authority to surrender a lease belonging to the company. The lease must be sur-

The Kentucky Court of Appeals in a recent decision ruled that where a miner was required to sound the roof of his working place and to set props after blasting he assumed the risk of being injured through a fall of slate when he removed coal without conforming to the regulation. The court also ruled that, although the person injured was but twenty years old, since he had worked in the mine for more than a year and under-



U. S. BUREAU OF MINES SAFETY STATION, McALESTER, OKLAHOMA. (See page 69.)

rendered by corporate action the same as a conveyance of property.

The eighth annual edition of *Metal Statistics*, published by The American Metal Market and Daily Iron and Steel Report, is just out. The volume is a real mine of statistical information and can truly be said to be almost indispensable in its particular field. An addition, and one that will be appreciated by many, is the including of reports on the production of coal, petroleum and cement. An examination of its 314 pages justifies one in feeling that nothing that should be found in a handbook of this character has been overlooked.

stood the work, his age should not be constituted a factor.

The smoke problem at smelting and ore-roasting plants, which has long been the subject of contention, is treated comprehensively in a bulletin just issued by the United States Bureau of Mines. The Bulletin, No. 84, entitled "Metallurgical Smoke," has been prepared by Charles H. Fulton, consulting metallurgist. The topic is treated in a manner entirely free from technicalities, presenting the information in such form as to be easily understood by the layman.

THE MINING CONGRESS JOURNAL

MARCH

CONTENTS

1915

DR. RITTMAN'S DISCOVERIES	117
COPPER EXPECTED TO GET BETTER TREATMENT	119
MINING AND LIFE INSURANCE	120
RADIUM AND POTASH WORK	120
GEOLOGICAL SURVEY EXHIBIT	121
COST OF COLORADO STRIKE	122
UNITED STATES ON WRONG INDUSTRIAL TRACK	123
THE RESCUE SYSTEM AT LAYLAND	126
EXPECT TO SOLVE SMOKE TROUBLES	128
PROPOSES DEPARTMENT OF MINES	129
NO MONEY FOR FOSTER BILL PROVISIONS.	129
EASTERN OHIO COAL STRIKE	130
RECENT LEGAL DECISIONS	132
PENDING STATE LEGISLATION	136
TRAFFIC DEVELOPMENTS	141
EDITORIALS	145
COPPER EXPORTS	15
EXPORTS OF STEEL AND IRON	150
DECREE IN MID-WEST OIL CASE	151
TALK OF THE DAY. (Editorial Comment)	156
GILLETT CONTRADICTED	159
GEORGE OTIS SMITH ON UNITED STATES MINERAL RESOURCES.	160
HEALTH CONDITIONS AT JOPLIN	163
OPPORTUNITIES FOR WORKERS.	165
NEW MAGAZINE STARTED.	165
PRICE CUTTING IN COAL TRADE	166
PERSONALS	169
PROSPECTOR TIM. (Poem)	169
SHOVELING MONEY, by CHAUNCEY THOMAS	171
MINE DANGERS MINIMIZED	172
COLORADO TRIP DEFERRED	173

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To the Members of the American Mining Congress:

Do you know that you are the owners and publishers of the MINING CONGRESS JOURNAL? We trust you will realize the responsibility of this ownership and that you will lend your active assistance in making the Journal a greater success.

Real mining men should be active members. An application blank will be found on another page of this issue.

Associate memberships are designed for those not actively interested in mining, but who are willing to assist a state Chapter of the Mining Congress in helping to develop the Mining industry within the State. All memberships include subscription to the MINING CONGRESS JOURNAL.

Every member of the Mining Congress should undertake to send in at least one application each month. Will you help by having the following blank filled in and mail to this office?

SUBSCRIPTION AND APPLICATION FOR ASSOCIATE MEMBERSHIP
IN THE
AMERICAN MINING CONGRESS

191

I hereby make application for Associate Membership in THE AMERICAN MINING CONGRESS, and agree, if accepted, to abide by the By-Laws, Rules and Regulations of said organization and to pay the dues required by same. Herewith find \$1.00 fee and \$2.00 dues for one year, including subscription to the Mining Congress Journal (\$1.00 of which is designated as subscription to Journal).

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DR. WALTER F. RITTMAN
Whose discoveries have surprised the scientific world

THE MINING CONGRESS JOURNAL

Official Publication of the American Mining Congress

DR. RITTMAN'S DISCOVERIES STAND TESTS OF INVESTIGATIONS

Oil Refining and Manufacture of Dyes and Explosives Likely to be Revolutionized by New Processes

Despite claims to the contrary attributed to the Standard Oil Company, there is reason to believe that no error has been made in proclaiming Dr. Walter F. Rittman as the discoverer of two chemical processes, which promise to be revolutionary in their effect on oil refining and on the manufacture of dyes and explosives.

The Secretary of the Interior, before making his announcement to this effect, had reports on the discovery from various competent authorities. His reputation for being conservative is well known, and it is not probable that he would have made such definite statements, had he not been absolutely sure of his ground.

The alleged claims of the Standard Oil Company are voiced by a nameless head of one of the biggest refineries. He is quoted as saying that Dr. Rittman has discovered nothing that was not known heretofore. The official is credited with the claim that the Standard Oil Company has known of these processes for many years, but has not put them into operation because they are too expensive. It is said to be more economical to produce a smaller quantity of gasoline than by adopting the new method which gives an increased proportion.

USING BURTON PROCESS

The Standard Oil Company is using the Burton process in the manufacture of motor spirits, which is taking the place of gasoline for some purposes. It is understood that the plants of the Indiana Company all have been adapted to the refining of motor spirits.

Toluol and benzol, according to the Standard Oil refiner, are present in crude petroleum in such small quantities that they cannot be manufactured commercially. If it were possible to compete with Germany, he says, this country would produce all of the toluol and benzol required from coal tar, of which a large quantity is wasted in America.

An agreement has been entered into by the Bureau of Mines and the Aetna Powder Company for the manufacture of toluol and benzol. This does not mean that other manufacturers of explosives may not have the advantage of the discovery. The agreement with the Aetna company is simply to demonstrate the practicability of the discoveries as applied to the commercial production of the two substances.

Negotiations now are in progress looking to a similar agreement for the manufacture of gasoline by the new process.

TO HURRY WORK

It is the intention of the Bureau of Mines to hurry preparations so as to make the discoveries available for use on the part of independent refiners. After nearly a month, from the time of the announcements of the discoveries it is stated that the original statement is to be qualified in no way. In his announcement February 29, Secretary Lane said the discovery of the method of increasing the supply of gasoline is of tremendous importance to the oil industry. The discoveries with regard to the materials necessary for the dye industry, and in the manufacture of high explosives, will result in the absolute independence of the United States from the rest of the world, in regard to these important materials, the Secretary said. It was, and is claimed, that the output of gasoline from petroleum can be increased 200 or more per cent. After careful calculation it is estimated that the production of gasoline on the part of independent refiners, can be increased three-fold.

IN GERMAN HANDS

Toluol and benzol always have been obtained heretofore from coal tar. This enabled the Germans, who have specialized in the by-products of coal, to control the world market of these two products.

While Dr. Rittman has been working for many years on the problems represented by his discoveries, it has been only since the war that he has given it his entire time. The cutting off of dye stuffs and material used in the manufacture of smokeless powder, and other explosives, called forth an unusual demand for supplies of these products.

Secretary Lane made the following statement at the time of the making public of the discovery, and states that he has no reason to change any phase of it in the light of the investigations that have followed the national attention that has been focussed on Dr. Rittman's achievement.

"These processes," said Secretary Lane, "are fraught with the utmost importance to the people of this country. For some time the

Standard Oil Company, through the great amount of money at its command, through its employment of expert chemists and through its extensive organization, has had a big advantage over the independents in the production of gasoline, this company having a patented process that obtains for it as much as three times the amount of gasoline from a given quantity of petroleum as the independents now obtain. There are two or three other large corporations that have an efficient process for the manufacture of gasoline, but the independents as a whole have never been able even to approach the results obtained by the Standard Oil Company. Now the Federal Government, through the efforts of Dr. Rittman, proposes to make free for the use of all of the people of this country who wish it, a process that is confidently expected to increase their yields of gasoline from crude petroleum fully 200 per cent. and perhaps more, such results having repeatedly been obtained in the laboratory.

SAFER AND SIMPLER

"It is claimed by Dr. Rittman that this process is safer, simpler and is more economical in time than processes now in use and these are economic factors of great importance. With a steadily increasing demand for gasoline for automobiles, motor boats and engines, this fortunate discovery comes at the proper time. It is but two years ago that the automobile industry, fearful that the supply of gasoline might not be adequate for its rapidly expanding business, offered through the International Association of Recognized Automobile Clubs, a prize of \$100,000 for a substitute for gasoline that would cost less than gasoline. Happily the urgency of this situation has passed and at the present time there is a plentiful supply of motor fuel to meet immediate demand. This new process adds to the hope, that in spite of the wonderful growth in the use of gasoline, there may not be any shortage in the future. It indicates an increased production of gasoline from the present production of petroleum—an output of 50,000,000 barrels instead of 25,000,000, as under the present methods. It will render free for use to all, the results of that efficient and intelligent research which has heretofore been only at the command of the wealthy.

CONSUMER TO BENEFIT

"I am led to believe that it will not only be of inestimable value to the refiners commanding but limited capital as well as those of wealth, but also to the hundreds of thousands of users of gasoline. When it is realized that the gasoline industry each year in this country yields products amounting in value to between \$100,000,000 and \$150,000,000, the importance of this discovery is seen.

(Continued on page 153.)

STATE DEPARTMENT EXPECTS COPPER TO GET BETTER TREATMENT

Allies Become More Lenient With Regard to Shipments to Neutral Countries, as Proof Comes of No Re-exportations

State Department officials believe there will be little further interference with copper shipments to neutral countries. They have made no representations looking to the forwarding of copper to Germany, Austria, or Turkey. Such a request would reflect on the sagacity of the State Department, especially as two of our American contraband lists contained copper. They were issued at a time copper did not play as important a part in the manufacture of munitions of war as at present.

Early in the war copper was placed on the list of conditional contraband by Great Britain. France soon issued an identical list. Later each nation specified copper as absolute contraband.

MAY BUY COPPER

Of the copper seized by Great Britain and taken to Gibraltar, none has been sent to the Prize court. Large quantities of copper were unloaded by English orders. It is thought that negotiations are in progress at present for the purchase of this copper by Great Britain. There has been a decided increase in copper shipments to neutral countries during recent months. This traffic will continue to increase, it is believed, at the State Department. This belief is based on the fact that little or no effort is being made to re-export copper from neutral countries. Early in the agitation in regard to copper shipments, it was claimed that large quantities of copper were being re-exported from Italy and the Scandinavian countries into Germany and Austria. Closer investigation of the

facts, however, indicate that very little copper has passed over the frontiers of neutral nations. This is giving rise to greater leniency on the part of the allies.

SOME DELAY UNAVOIDABLE

All shipments of copper are subject to some delay, due to the scrutiny imposed by English and French officials. If the papers covering the cargo make clear the final destination, ships are being passed with a minimum of delay.

In order to shorten the time required for inspection, many shippers of copper are calling at the British, French and Italian embassies here to secure credentials from the ambassadors of these countries. By convincing the diplomatic representatives of the countries interested that no effort is to be made to get the copper into Germany, Austria, or Turkey, much delay on the high seas is avoided.

It is known that the English Government has secret-service men along neutral frontiers watching for copper. Had even a single shipment of copper been made, it is practically certain to have become known. There is every reason to think, according to students of the situation here, that the English Government is convinced that little traffic in copper or other material for war purposes, shipped from this side of the Atlantic, is reaching Germany.

With the Michigan mines working at full time, with prospects good for large consumption in Russia, in addition to increased purchases on the part of the allies, the belief is strong that copper exports are certain to continue to increase.

RADIUM AND POTASH WORK BEING PUSHED

GEOLOGICAL SURVEY FIELD MEN ACTIVE
IN STUDIES OF MUCH NEEDED
MINERALS

Field work by the Geological Survey is being pushed in the districts containing radium-bearing ores. Much attention is being given to investigation as to the occurrence of potash and nitrate salts. The field work of the Survey has to do with the distribution, mode of occurrence and origin of metalliferous ore deposits; investigation of non-metalliferous and non-fuel deposits, and examination of fuel resources, particularly with respect to the origin, mutual relations and migrations of oil, gas and water. The history of ice invasions, with special reference to drifts and their relations to the soils of the Northern States, are receiving attention this month. Local structural studies are being carried on in various parts of the country for the purpose of discovering new facts with regard to oil and gas deposits.

During the past month attention has been concentrated on problems of the character and condition of sedimentary deposits of different kinds. Mapping, for use by the public, is being pushed as fast as circumstances will permit.

There is opening a rather extensive market for railroad coal in Italy, and many requests have been made of the American Ambassador at Rome by Government officials and others connected with large operations to be placed in touch with coal producers in the United States.

An American consular officer in South America reports that he has been requested to assist in securing connection with a coal firm in the United States which is prepared to deliver gas coal. About 7,000 tons per year will be used. Information in reference to this may be had by addressing "Bureau of Foreign and Domestic Commerce, Washington, D. C., and mentioning No. 15845.

IS LEGITIMATE BUSINESS

MINING AND LIFE INSURANCE HAVE
POINTS IN COMMON

Metalliferous mining is a legitimate business. It is not gambling. When intelligently followed, it is safer than banking and sometimes much more profitable.

Life insurance is a safe business. The insurance of a single life is filled with hazard. By assuming enough risks to reach the average of loss, life insurance becomes a safe business.

The effort to make a mine from a single prospect is extremely hazardous. By cooperation—corporation—we may reach the average—and gold mining, like life insurance, becomes a safe business.

Mining is a business requiring capital, persistence and the highest scientific attainment for success. To bring capital and mining brains together to their mutual profit, and to keep capital away from pretended miners lacking the attainments necessary to success, is one of the missions of the American Mining Congress.

This purpose contains the element of intelligent selfishness. The West has the opportunities; it needs the money for their exploitation. A losing mining investment closes a door to western development and locks up golden treasure needed in the nation's finance. Much has been done to protect the innocent investor against the pitfalls of mining fakirs and high finance in mining.

Much more remains to be done. Your cooperation will be of service.

There is ready market for copper in Sweden, and many large factories that depend on copper will have to shut down unless supplies can be had. Before the war Sweden imported copper to the extent of 800 tons per month. The imports now have dropped to about 350 tons monthly.

Norway has placed an embargo on the shipment of all copper and brass plates, bars, bolts, spikes, nails, pipes and foundry pieces.

GEOLOGICAL SURVEY MAKES EFFORT TO INTEREST LAYMAN

**Exhibits at Panama-Pacific Exposition Planned so as to
Appeal to General Public—Government
Spends \$25,000**

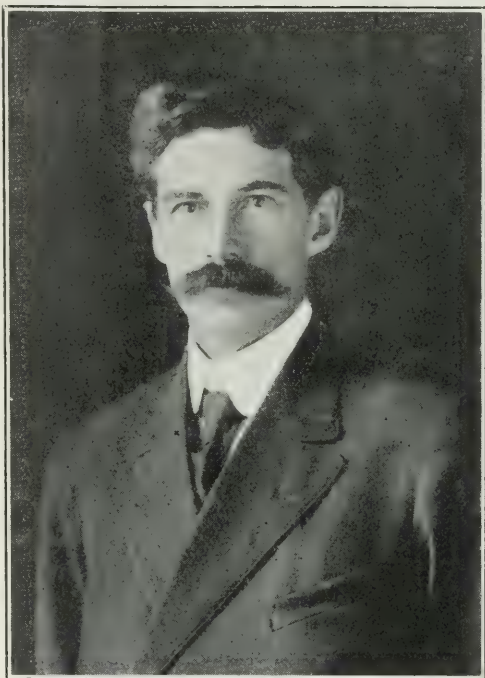
Officials of the United States Geological Survey consider the exhibit of the bureau, at the Panama-Pacific Exposition, as one of their most important accomplishments. This is based on the belief that this exhibit will have a far-reaching educational value. It will enable the general public to gain a concise idea of the practical side of the Survey's work. One of the regrets of the men connected with the Survey is their failure to interest the general public more deeply in their efforts. A limited percentage of the population, consisting largely of technical men, realizes fully the notable work that has been accomplished by this bureau, it is believed.

At the exposition all of the Survey's exhibits have been arranged with the express purpose of attracting the attention of the non-technical visitor. It is believed that thousands of persons thus will be brought to realize the practical value of the work being done.

In order to demonstrate clearly the points in the United States where minerals occur, it was necessary to prepare a special map. Strange as it may seem, no map had ever been made, showing the occurrence of all the minerals in the United States. Many special maps referring to one or more minerals have been prepared at different times, however.

One of the features of the exhibits will be a scenario, showing a typical scene in the undeveloped West, when first entered by the Survey's field men, and the same site after development.

Stereomoteograph pictures will be shown in connection with this exhibit. The camps, modes of travel, pack trains, and views indicating the daily life of



GEO. H. ASHLEY
Administrative Geologist of the Geological Survey,
who planned the exhibit at the Panama-
Pacific Exposition

the field men, will be thrown continuously on a large screen.

Much attention has been given the fuel exhibit. Large maps will show the location of coal fields. Bins beneath the maps will contain samples of the various kinds of coal indicated. The relative production and reserves of coal in the different States are indicated by blocks of varying sizes.

Oil comes in for considerable attention. The diagram shows the history of oil development in each State. The present production is indicated on charts in

a way which can be understood readily by any layman. As oil shale undoubtedly must be the future source of oil, a portion of the oil exhibit has to do with this phase of the industry.

A display of the work of the Division of Engraving is made. Engraved maps in various stages are shown. Topographical instruments and other paraphernalia in common use by the bureau's experts, with an explanation of their use, are on display. The desirability of mounting a large map of the United States on the schoolroom wall under celluloid is brought out clearly by a sample map mounted in this way.

The Survey's study of the western oil fields can be reviewed in a very few moments' study of another portion of the exhibit. Cross-sections of oil domes and of oil strata are shown.

A model of Mount Lassen has been prepared, and will be placed in the exhibit. Owing to the interest in this California volcano, some of the interesting scientific features in connection with its recent eruption are brought out.

A number of very excellent transparencies are shown in a clever manner at the corners of the Survey's space. Structures to represent sections of a tunnel have been built. The entrances to these tunnels are modeled after mine entrances.

George H. Ashley, administrative geologist, has been in charge of the preparation of the exhibit, which has been completed at a cost of \$25,000.

From present prospects there promises to be an extraordinary demand for all kinds of United States coal in Great Britain. Many inquiries are being received here from the large gas companies, industrial concerns and not a few private consumers. The principal reason for the shortage is the enlistment of about 50 per cent. of the colliers of Lancashire and Yorkshire, who are in special demand at the front as expert trench diggers. The Government has tried the experiment of lengthening the work hours of those left behind, but this has been of very little help.

COST OF COAL STRIKE

FIXED AT \$1,250,000

HEAD OF COLORADO FUEL AND IRON COMPANY ISSUES STATEMENT ON TROUBLES—PLANS CLUBHOUSES

The recent strike at the mines of the Colorado Fuel and Iron Company cost the company, directly and indirectly, approximately \$1,250,000, President Jesse F. Welborn estimated in a statement issued recently in connection with the monthly meeting of the directors.

The statement told of a plan, already partly put into effect, for providing clubhouses at a number of the Colorado camps, and also went into detail regarding the condition of the company's business and its prospects.

A report was submitted by President Welborn showing earnings for the month of January and for the first seven months of the company's fiscal year. Gross earnings for the latter period showed marked decreases from the preceding two years, but the company's deficit, after deducting all charges, now is \$496,481, compared with \$579,641 a year ago and \$922,712 two years ago.

President Welborn's detailed statement, in which reference was made to the cost of the recent strike, computed this cost at \$464,000 in direct outlay and at from \$700,000 to \$800,000 indirectly.

UNITED STATES REFINES MOST NICKEL

Although the United States refines more nickel than any other country, practically all the ore used comes from Ontario and New Caledonia. It is there reduced to matte, according to the United States Geological Survey, and then shipped to this country for further reduction to metal. The only domestic nickel produced is a small quantity obtained from blister copper as a by-product in electrolytic refining, and even this small quantity is so mixed as to source that what part of it is of domestic origin and what part is of foreign origin cannot be determined.

UNITED STATES ON WRONG INDUSTRIAL TRACK, SAYS GEO. W. PERKINS

Head of International Harvester Company Points to Lessons Which May Be Learned from Germany— Blames Politicians for Part in Present Situation

Arguments for the centralization of industry were presented in a remarkable speech by George W. Perkins, before the Economic Club, of New York, February 10. He attributes Germany's commercial rise largely to the gathering of its industries in large units. He points out that twenty-five years ago Germany was the land of the small industrial unit. At that time it had a high percentage of immigration. With the growth of this industrial system, emigration has fallen to zero. Regardless as to whether Germany is right or wrong in the present war, Mr. Perkins declares the nation is on the right industrial track; that its people have been long-headed and far-sighted. Quite in contrast with conditions in the United States, the Germans have kept abreast of the new age in which the world is moving and living, Mr. Perkins declares. He says that we are on the wrong industrial track, and he charges politicians with a great part of the responsibility. He pleads with the nation and with its people to stop the persecution that is characterizing its attitude toward high-minded institutions, whose only crimes are in being large.

Mr. Perkins' attitude toward full publicity has been expressed many times, but he reiterates his ideas in this address. He also expressed his advocacy of Federal regulation of the great interstate and international concerns.

In part, Mr. Perkins said:

While our so-called statesmen have been haranguing our people on the subject of giant corporations being a menace to their liberty, to their business and physical welfare, and have been demand-

ing that we return to the methods of ruthless competition and abandon the idea of cooperation, German statesmen have been preaching exactly the opposite doctrine to their people. For twenty-five years Germany and this country have been pursuing opposite economic policies. Our Sherman Law was passed twenty-five years ago; and since that time, and particularly during the past fifteen years, our politicians have thrived and grown fat in an effort to force our business men to do business under a literal interpretation of that law, which, our politicians have told us, means the breaking up of all large business units and the holding of our commercial relations to a strictly competitive basis.

WHOLE NATION CHANGES

Twenty-five years ago Germany was the land of the small industrial unit, and her people were leaving the country every year in large numbers, seeking some other land where they hoped to find better industrial conditions. Then Germany gradually changed her system of economics. Her political leaders, her statesmen, with great foresight and after careful thought and study, realized that modern intercommunication must inevitably mean centralization, vast expansion in trading opportunities, vast responsibilities for the State, vast additional powers for the man of large mental endowment and of large means. In place of passing laws to repress and repel and prohibit all this, the Germans took exactly the opposite course and began to gather their industries together into large units, under the watchful eye of the Government or under the actual

control of the Government in some form. Rapidly, and practically in unison with the mighty growth of intercommunication, Germany has forged ahead during the last twenty-five years, centralizing her various industries, until now nearly every industry in Germany is organized and centralized in some form of large business unit. As a result, great commercial power and vast commercial profits have come to her people. And now, mark this well: While this centralization has been going on, emigration from Germany has fallen from what was a very large figure twenty-five years ago, practically to zero during the last two or three years. Does not this rebuke the theories of our politicians and so-called statesmen? For the theory they have been preaching has been that if we permitted centralization and cooperation in business it would bring hardship and ruin to our people; while the actual carrying out of such a policy in Germany has resulted in the industrial prosperity and contentment of her people.

SAYS GERMANY IS RIGHT

What ever may be said or thought regarding Germany's attitude in the present war, no thoughtful, studious man, who has taken the pains to study Germany's commercial evolution during the last twenty-five years, can for one moment doubt that her statesmen have been on the right industrial track; that they have been long-headed and far-sighted; that they have cast off the economics of the past and taken on the economics of the future; that they have discarded old laws and old methods and enacted new laws and adopted new methods, to keep abreast of the new age in which the world is moving and living; and that all this has been to the great material advantage of Germany's people as a whole.

On the other hand, no thoughtful, studious man who has taken the pains to study our own commercial evolution during the last twenty-five years, can for one moment doubt that our so-called statesmen have been on the wrong industrial track; that they have been short-sighted; have refused to cast off the economics of the past and take on the

economics of the future; have refused to discard old laws and old methods and to enact new laws and adopt new methods, to keep abreast of the new age in which the world of today is moving and living; and that all this has been to the material disadvantage of our people as a whole.

Is it not high time that we called a halt; that we got our bearings, both at home and abroad? Is it not just possible that Germany's industrial program is more in keeping with the twentieth century than is our own industrial program? If so, will she not outstrip us in the next quarter of a century in the race for commercial supremacy? Is it not just possible that our statesmen have been wrong in claiming that the commercial salvation of this country depends wholly on the enforcement of their interpretation of the Sherman Law? Is it not just possible that, in place of repressive legislation, what has been and is needed is permissive legislation, with restrictions that will safeguard the people from the avarice of unscrupulous men?

BELIEVES IN PUBLICITY

On many occasions I have publicly stated my views on this subject, strongly advocating publicity with Federal regulation of our great interstate and international industrial concerns. I have made known my own views upon the subject of the public policy that is required to enable the economic development of the United States to hold its own with that of Germany. The results of my reflection upon the problem may be summed up in two brief phrases: (1) Federal regulation of our great interstate and international industrial concerns; (2) complete publicity as to the affairs of these concerns. The latter is as important as the former; for both are needed to establish and maintain public confidence in the rectitude and public spirit of the conduct of our great business enterprises. The people must be satisfied that centralized power will not be abused in the future as it has been in the past. For, while human nature may not be as selfish as of old, it is still selfish; and

while we can and must discard old economics for new, it is not so easy to discard selfishness for unselfishness. I believe a solution of this problem must come largely through the setting up in this country of some other standard of reward than that of the "almighty dollar"—some other mark of distinction than the number of millions a man is worth or leaves at his death. The yardstick of wealth, as the measure of a man's worth, must give way to the yardstick of service for service's sake. Our industrial system must be such that a man holding a high business position will be held in high esteem as a public servant, receiving two kinds of pay: His reward in money and his reward in honors,—both in exchange for service rendered. Publicity, full and frank, would be potential in establishing such a system.

NEVADA'S 1914 MINE YIELD

A decrease in the metal output for Nevada in 1914 of 22 per cent as compared with 1913 is shown in figures given out by the United States Geological Survey. The value of Nevada's metal yield for 1914 is estimated at \$28,800,000 against \$37,097,000 in 1913. The most marked decrease was in copper, especially during the last four months of the year, due to the effect of the war abroad. There was also a considerable falling off in lead and zinc. In gold there was a decrease of about 4 per cent, being in amount from \$11,795,130 to \$11,320,000. There was likewise a small decrease in silver production from 16,090,083 ounces to about 15,200,000 ounces. The price of silver, however, was much reduced, the value being decreased from \$9,718,410 to about \$8,313,000.

Because of the market depression the copper production in Nevada was reduced from 90,963,751 pounds in 1913 to 60,561,000 pounds in 1914. Lead production decreased from 16,344,023 pounds in 1913 to 13,794,000 pounds in 1914. The recoverable spelter output from zinc ores was about 13,000,000 pounds in 1914, against 14,419,671 pounds in 1913.

WILL AID MINERS

MINING CONGRESS JOURNAL COMMENDED BY REPRESENTATIVE FOSTER

Great benefit will result from the publication of the MINING CONGRESS JOURNAL, according to the belief of Martin D. Foster, chairman of the House Committee on Mines and Mining. In a letter to J. F. Callbreath, secretary of the Congress, Mr. Foster says:

"I am in receipt of the first number of the MINING CONGRESS JOURNAL published by the American Mining Congress.

"I have examined this very carefully, and have read some of the articles published in this issue. I am very much pleased to know that you are to publish this journal in the interest of the Mining Congress and for the benefit of the mining industry of the United States.

"The mining industry of the country is one of such great importance that I feel we cannot give too much attention to it, and I am sure in your hands, that this matter will be carefully looked after, and the discussion of subjects pertaining to the industry will be of great benefit generally to the mining interests in the United States, and I think just what we need is to take up these subjects and discuss them in all their phases in a careful way.

"The men associated with you, who are also members of the Mining Congress, are of such pronounced leaders in this work that their names help to assure all of the importance of this publication.

"I congratulate you upon the first issue of so important a journal."

The radium market abroad has for the present been totally closed by the European War. The uranium ores of Colorado and Utah are sold exclusively for their radium content. Europe thus far has supplied the only market. Several bills have been introduced in Congress looking to bringing the United States Government into the field as a buyer, but as yet they have failed of passage and the miner, therefore, at present has no chance to sell his ore.

RESCUE SYSTEM MAKES POSSIBLE THE SAVING OF MANY LIVES AT LAYLAND

Bureau of Mines and West Virginia Mining Inspectors Show Effectiveness of Their Plan When 47 Are Saved

With the saving of forty-seven entombed men from the mine of the New River and Pocahontas Coal Company, near Layland, W. Va., after an explosion March 2, the Bureau of Mines has a

make their way out after the accident.

There was no oxygen rescue apparatus at hand at the time of the explosion. The main exit to the mine was partly blocked so an air course had to be used



SHOWING CONDITIONS UNDER WHICH RESCUE CREWS HAD TO ENTER MINE

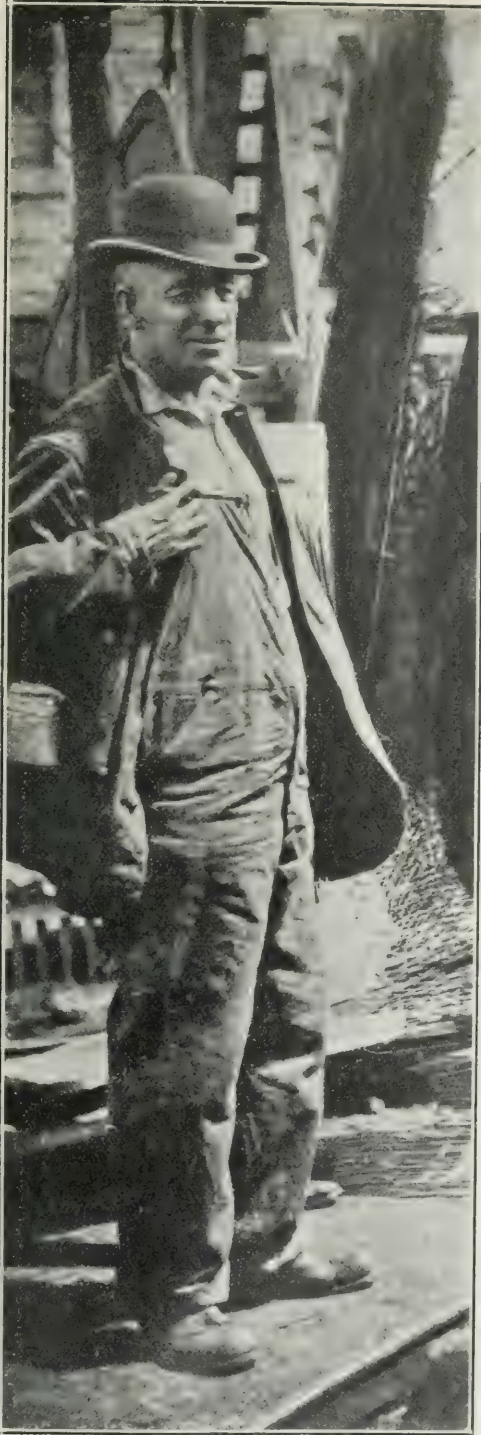
new and more positive proof of the effectiveness of its system of rescue. Results were made more satisfactory by the good judgment shown by the miners, who bratticed themselves off when the exits were filled with afterdamp. The fact that these men displayed this presence of mind made possible their rescue.

There were about 170 men in the mine at the time of the accident. Many of these were killed by the direct force of the explosion. In addition to the forty-seven saved, seven men were able to

for entrance. The force of the explosion damaged the fans, but repairs were made within a short time after the accident and fresh air was forced into the outer parts of the mine. By getting fresh air into parts of the mine the seven miners, with the assistance of the unequipped rescue party, were able to escape shortly after the explosion.

INSPECTORS SYSTEMATIZE WORK

Prompt arrival of the State mining inspectors led to an early systematizing



EARL HENRY
Chief Inspector of Mines of West Virginia

of the work of rescue. There was cooperation on the part of all concerned. The Norfolk and Western and Chesapeake and Ohio Railroads made possible the early arrival of a rescue car of the Bureau of Mines. The car, at the time of the accident, was 243 miles away. Despite the fact that it had to be conducted over railroads crowded with traffic, the run was made in eight and three-fourths hours. The car was in charge of D. J. Parker, mining engineer; Dr. D. W. Alycott, surgeon; H. D. Jones, foreman miner; R. H. Seip, first-aid miner, and Edwin Staley, clerk. All were placed under the orders of the State inspector and entered the mine for exploration work.

OXYGEN CREW ARRIVES

The next afternoon the oxygen apparatus crew of eleven men from Gary, W. Va., reached the scene of the disaster. Chemist Klier, in charge of the Gary crew, did remarkable work. J. W. Paul, the Bureau of Mines chief of rescue operations, and his assistant, H. D. Mason, arrived with the Gary crew.

The rescue force was divided into three crews, which worked in shifts. One shift always was in advance of the force of miners engaged in bratticing and recovering the bodies. By having men equipped with oxygen apparatus in advance of the fresh air, it was possible to avoid fires, which undoubtedly would have followed the entrance of air.

It became necessary, after two of the mines had been explored, to reverse the air current. This required repairs to the fans and crews had to be withdrawn from the mine during one night. To the surprise of everybody the following morning five men walked out of the mine. They had bratticed themselves in after the explosion. The closing down of the fan allowed the air to clear partially at the point where they were confined, and permitted their escape. Their presence of mind is indicated by the fact that they collected twenty buckets of water, as well as all their dinner buckets, before closing themselves up. It was the opinion of the five men who escaped that

(Continued on page 135.)

EXPERT COMMISSIONS EXPECTED TO SOLVE SMELTER SMOKE TROUBLES

Federal Government Sees Much Hope in Success of Selby Investigation—Anaconda Problem Being Studied

Litigation feuds between farmers and owners of plants for smelting ores which in the past have cost millions of dollars may in the future be settled without resort to the courts, if the Federal Government has its way. Already in two instances the Federal authorities have taken up the quarrels between the two industries and have suggested settlement based upon the findings of expert commissions.

One commission, which inquired into the nuisance at the Selby smelter in California already has made its report to the courts and has proven to the satisfaction of the farmers that through their efforts no nuisance is now being committed by the smelter. The commission makes the further suggestion to the farmers that the damage for some time past has been psychological and not real; that, in other words, the farmers, believing that the smoke from the smelter was damaging their crops, failed to do their work properly with the result that insects practically destroyed the crops.

A second disinterested commission appointed by an agreement between the United States Department of Justice and the Anaconda Company of Montana already has begun a study of the smoke problem in Montana. The prime mover in an attempt to adjust the differences between the farmers and the smelters is Dr. Joseph A. Holmes, the director of the Federal Bureau of Mines. In a report recently issued, Dr. Holmes says:

It is well known that mining and metallurgy are often the advance agents of civilization and the pioneers in establishing industrial centers. In many localities the mines and the smelter supplied by them were essentially the only locators within great stretches of territory. Around them grew communities

and cities dependent upon them for a livelihood. Agriculture was relatively of small importance. But conditions changed with the increasing population of the country and the closer settlement of the West. Coincident with this increase an agricultural industry has developed. In the vicinity of the smelting plants it naturally suffers in some degree from smoke. Still, the area damaged is comparatively small and even this damage can be much lessened by the adoption of proper means.

The solution of the problem is not yet at hand and much work still remains to be done. As the mineral industry is one of the great basic industries of the country and of necessity is entitled to full consideration, it should be accorded freedom to work out the smoke problem to the benefit of all concerned.

At the same time, the Bureau of Mines does not attempt to deny the magnitude of the problem. In describing the Washoe plant of the Anaconda Company in Montana, the government engineers declare that the smoke from that plant each day is equal to 2,092 tons of sulphur-dioxide gas, and if converted into sulphuric acid would yield 3,427 tons of acid, or about one third of the total production of the United States.

The annual report of Maryland's State Mine Inspector William Walters for the yearly period ending May 1, 1914, shows that there were 163 accidents, of which seventeen were fatal, being two in excess of the fatalities for the preceding yearly period. There was a decrease of fifteen in the now-fatal accidents. The total coal production for 1913 was 4,239,643 tons, all but 640,897 tons of this being mined in Allegheny County. The total number of men employed was 5,559, a decrease of 144.

FOSTER BILL PASSES; NO MONEY PROVIDED

The full text of the Foster bill passed at the last session of Congress is as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of the Interior is hereby authorized and directed to establish and maintain in the several important mining regions of the United States and the Territory of Alaska, as Congress may appropriate for the necessary employes and other expenses, under the Bureau of Mines and in accordance with the provisions of the act establishing said bureau, ten mining experiment stations and seven mine safety stations, movable or stationary, in addition to those already established, the province and duty of which shall be to make investigations and disseminate information with a view of improving conditions in the mining, quarrying, metallurgical, and other mineral industries, safeguarding life among employes, preventing unnecessary waste of resources, and otherwise contributing to the advancement of these industries: Provided, That not more than three mining experiment stations and mine safety stations hereinabove authorized shall be established in any one fiscal year under the appropriations made therefor.

Sec. 2. That the Secretary of the Interior is hereby authorized to accept lands, buildings, or other contributions from the several States offering to cooperate in carrying out the purposes of this act.

Approved, March 3, 1915.

Owing to the failure to provide an appropriation for carrying out the purposes of the bill, it will be impossible to take steps along the lines indicated until the money is provided by the next Congress.

Involving approximately 6,000 acres and a price said to be \$500,000, the mining property at Hallidayboro, Ill., has been transferred to the Jackson County Coal Company, of Charleston, West Virginia, according to the statement of James Forester, of the Illinois State Mining Board.

The Federated Malay States in 1913 mined 56,142 short tons of tin, of which 5,700 tons were block tin and 50,441 were tin ore. The exports of tin and tin ore during 1913 were valued at \$47,542,628, compared with \$47,839,294 in 1912.

PROPOSES DEPARTMENT OF MINES FOR ILLINOIS

PROF. DODD SAYS STATE SHOULD COM-
BINE MINE, RESCUE AND LABOR
ACTIVITIES

In a report on the administration of labor and mining legislation in Illinois by W. F. Dodd, associate professor of political science at the University of Illinois, to the joint efficiency and economy committee of the State, a department of labor and mining is recommended. The report is to be submitted to the State Legislature in accordance with plans made in connection with the creation of the committee by the preceding general assembly.

Professor Dodd in his report crystallizes his recommendations in the following:

That all labor bureaus and offices be consolidated into a department of labor and mining, which should have the following bureaus or divisions:

- Bureau of statistics;
- Bureau of inspection, to cover the work now undertaken by the factory inspection department;
- Bureau of employment, to operate public employment offices and to inspect private employment agencies;
- Bureau of workmen's compensation;
- Division of mining.

With respect to the State mining services, the report says, the essential recommendations for reorganizations may be summarized as follows:

Continue the present State mining board, which should unite the functions now exercised by the State mining board and mine rescue commission;

The appointment of a secretary who shall have executive charge of the work of the State mining board and direct supervision over the several inspectors;

The abolition of the office of county mine inspector and the increase of the State inspectional force.

The committee has disapproved a recommendation by Professor Dodd that power be granted to the State mining board to make rules supplementing the present mining laws. It also declined to accept his recommendation for a bureau of arbitration and mediation.

PRESIDENT BELIEVES EASTERN OHIO COAL STRIKE WILL BE SETTLED

Mr. Wilson Meets Representatives of Coal Operators and Discusses General Situation—Union Makes Change in Policy

REVIEW OF PITTSBURGH VEIN SITUATION IN A NUTSHELL

Question of Unionism—Not involved. Miners out of work—16,000.

Persons directly affected—About 45,000, counting women and children.

Strike began April 1, 1914.

District affected—Belmont, Harrison and Jefferson Counties (Ohio).

Number of mines involved—One hundred.

Cause of strike—Inability of operators and miners to agree on a mine run equivalent of the screen coal prices paid under the last contract.

Situation in Ohio—The passage by the Ohio State legislature at the last session of what is known as the "Anti-Screen Law." This law prevented the operators and miners of Ohio from renewing their former contracts, as was done in Indiana, Illinois and Western Pennsylvania, the other States comprising the central competitive field, and compelled a change from the screen coal system to the mine run system.

Basis for renewal of contracts expiring March 31, 1914, in States of Illinois, Indiana and Western Pennsylvania—report of miners' policy committee made at Chicago—all contracts should be renewed at the prices in last contract, except where the method had been changed by law or otherwise from the screen coal to the mine run system; in such cases the mine run price should be the equivalent of the last contract screen coal price. Contracts to be made by districts, sub-districts, or groups of districts.

Settlement by sub-districts in Ohio—The State of Ohio constitutes a district, and inasmuch as no agreement was ar-

rived at for the district, agreements were made by sub-districts, with the exception of the Eastern Ohio sub-district where no agreement has yet been made.

Price demanded by miners in Eastern Ohio is an increase of nearly three cents a ton over the equivalent of the price under the last contract and an increase of 2.39 cents per ton over the price accepted by the Miners' Organization for the Pittsburgh district of Pennsylvania. This coal is the same vein as the Eastern Ohio coal and is sold in competition with it.

Miners in the Hocking Valley district of Ohio accepted a reduction of nearly six cents per ton below what would have been the correct mine run equivalent of last year's cost.

Board of Conciliators—Appointed by Secretary of Labor on request of Congressman Francis, of Ohio, who represents the district in which the strike prevails, in response to requests made to him by boards of trade and other bodies representing the public in the strike district.

Members—Dan J. Keefe and Hywel Davies.

Hearings—With the operators at Wheeling and the miners' representatives at Indianapolis.

Joint hearing—At Cleveland, Ohio.

Parties present at Joint hearing—United Mine Workers, represented by John P. White, national president; William Green, national secretary; John Moore, president of the Ohio organization, and other officials. Operators represented by committee composed by C. E. Maurler, H. E. Willard, S. H. Robbins, Michael Gallagher, Joseph Persglove, George M. Jones and R. L. Wildermuth.

Written proceedings: 1st. Operators offer to accept the report of the conciliators as final and binding.

2nd. Miners refuse.

3rd. Operators offer to submit question to arbitration and allow conciliators to name umpires.

4th. Miners refuse.

5th. Miners offer to arbitrate, provided mines resume work on the increased demand of the miners, and umpires be appointed by miners and operators.

6th. Operators refuse for the reason that the disagreement between operators and miners as to the appointment of umpires would effectually block the arbitration.

7th. Operators renew their offer to arbitrate and provide that umpires shall be selected by the Federal Judges of the northern district of Ohio.

8th. Miners refuse.

9th. Operators again renew their offer to arbitrate and provide that the umpires shall be selected by the President of the United States.

10th. Miners refuse.

11th. Secretary Green, of the Miners' Organization, withdraws the agreement of the miners to submit their differences to arbitration, and states that the only settlement that can be had will be when the operators are willing to accede to the original demands of the miners.

Rate under last contract—69.50 cents per ton for machine mined screen coal.

Method of arriving at mine-run rate—The equivalent of the screen-coal rate is determined by the percentage of fine coal.

Rate demanded by the miners—47 cents per ton mine-run for all districts in Ohio.

Rates given by conciliators report—Hocking Valley district, 53; Cambridge, 47; Eastern Ohio, 44.01.

Mine-run rate, Pittsburgh district of Pennsylvania, 44.61.

INTERVIEW PRESIDENT

All companies involved in the strike are operating on a thin vein, known as the "Pittsburgh vein." Representatives of these companies were in Washington last month and laid their views in the matter before the President. Mr. Wilson

reiterated his well-known attitude favoring arbitration. His attitude in the Colorado strike expresses exactly his position with regard to the Eastern Ohio situation.

In Colorado the attitude of the strikers was to favor a demand for arbitration, even in face of a refusal of the operators to arbitrate. The situation in Eastern Ohio is parallel to the Colorado case, in that an arbitration is demanded, but a difference exists in the fact that the same miners' organization that demanded and insisted on arbitration in Colorado refuses to arbitrate in Ohio.

The action of the miners in Eastern Ohio, in voting to refuse arbitration, is regarded by many labor experts to be a blow at one of the fundamental principles on which the miners' organization was founded. It is regarded as almost certain to be a source of embarrassment to the organization, especially as it gives the Colorado operators an opportunity to say that it is not principle that is guiding the union, but rather a question of their own advantage whether they arbitrate or not. There is a Dr. Jekyll and Mr. Hyde attitude in the Colorado-Ohio situation, which is regarded by students of the situation as being highly significant.

WANT FULL PUBLICITY

The President, after hearing the operators' review of the situation, took a very optimistic view of conditions, and apparently, is very hopeful that some method of settling the strike will be devised. One feature in the handling of the matter by the Department of Labor did not meet the approval of the operators' committee. The Department of Labor issued a synopsis of the report of Daniel J. Keefe and Hywel Davies, the Commissioners of Conciliation. The Secretary of Labor stated that the entire report was not made public, as certain portions of it are to be held in confidence at this time. The operators feel that since they had advocated full publicity throughout the entire proceedings, there should be no lack of the same policy on the part of the Department.

(Continued on page 158.)

RECENT LEGAL DECISIONS

TAXATION OF MINING CLAIMS

The Constitution of Montana provides that all mines and mining claims after purchase from the United States shall be taxed at the price paid the United States therefor, unless the surface ground is used for other than mining purposes and has a separate and independent value for such other purposes, and in such case it shall be taxed at its value for such other purposes.

The purpose of this provision was to bring into the class of taxable property mines and mining claims and providing a method by which the owners of mining claims might be compelled to bear their equitable portion of the expenses of government. But so long as a mining claim is used and held exclusively for mining purposes, the owner is not required to bear any other burden, but if by its location it has acquired a value for some independent use and is devoted by the owner to such use, it becomes at once subject to taxation at that value as other real estate, to be ascertained by the assessing officer as he ascertains the value of other lands for the purpose of taxation. By thus devoting it to a new use the owner creates, as it were, an estate, which in the eye of the law, is regarded as independent of the original estate and is subject to taxation as such.

Two conditions must concur to justify the imposition of the additional burden: First, the surface ground, or some part thereof, must be used for other than mining purposes; second, it must have an independent value for that purpose. Not until these two conditions concur can the additional burden be imposed upon the owner. The constitutional provision is not one of exemption, but is really a revenue measure apportioning to the owners of mining claims what was deemed to be their just proportion of the public burden, and before the additional burden can be imposed the taxing authorities must ascertain that the conditions authorizing its imposition, in fact exist.

The fact that a mining claim is within town-site limits, and that the owner has platted it for the purpose of putting the lots upon the market for sale and selling them, was sufficient to show an actual use and an independent value for that purpose, but is not alone sufficient to make it subject to the burden of taxation under this constitutional provision; but before the burden can be lawfully imposed the surface must have been devoted to an independent use. Mere surface improvements, in the way of filling gulches and leveling the ground, is not sufficient to prove such an independent use in the absence of showing of intent on the part of the owner to use such mining claim for purpose other than mining.

Barnard Real Estate Co. v. City of Butte (Mont.) 146 Pacific Rep. 946.

VIOLATION OF STATUTES REGULATING MINING OPERATIONS

The statute of Nevada makes it unlawful for the operator of a mine to sink or work through any vertical shaft at a greater depth than 350 feet, unless the shaft shall be provided with an iron-bonneted safety cage to be used in lowering and hoisting miners, and is intended not primarily to subject the violator to fine or imprisonment, but rather intended to safeguard life and limb of those who, in the pursuit of their vocation, are called upon to go into places where danger is attendant at every moment and the equipment prescribed being, in the judgment of the legislative body, the best means for affording reasonable safety to the employee. That equipment, or its equivalent, in safety efficiency is made obligatory on the operator, and the penalty imposed for its violation was rather prescribed as a reminder that the law is a police regulation, enacted for the purpose of minimizing casualties which entail suffering, privation, and death on those who may be unfortunate victims. The law is not complied with by having such a safety cage somewhere about the

workings of the mine without using it, so long as the miners did not demand its use. A mine operator is liable for an inadvertent or an ignorant failure to comply with the provisions of such a statute to the same extent as in case of an intentional evasion thereof; and as the violation of the statute is made a misdemeanor, any injury to the person of another caused by such violation, is the subject of an action for damages, and the violation of the statute is the basis of the right to recover and constitutes negligence *per se*.

Ryan v. Manhattan Big Four Mining Co. (Nevada) 145 Pacific Rep. 907.

VIOLATION OF MINING STATUTES—PROXIMATE CAUSE OF INJURY

In an action by a miner for damages for injuries sustained by reason of the alleged failure of the mine operator to comply with the statute of Nevada, in furnishing an iron-bonneted safety cage for lowering and raising the miners to and from their working place in the mine, the question to be determined is whether or not the non-compliance with the statute on the part of the operator and his failure to afford that protection which the statute intended to be afforded to the miner, was reasonable when taken in connection with the accident in which the miner was injured. The mere non-compliance with the statute, on the part of the mine operator, did not entitle the miner to damages for the injuries sustained, unless the non-compliance with the statute furnished the proximate cause of the accident, and unless a compliance with the statute would have avoided the accident and saved the miner from the injuries. But where a mine operator willfully disregards a statutory duty, a miner, injured by reason thereof, cannot be charged with the assumption of risk, nor can he be charged with contributory negligence, such as will defeat his right of recovery.

Ryan v. Manhattan Big Four Mining Co. (Nevada) 145 Pacific Rep. 907.

CONVERSION OF ORE—LIABILITY OF TRESPASSER

In case of an innocent trespass by mining and milling metalliferous ores, and

where the trespasser sells a finished product and applies the proceeds to his own use, the measure of damages in an action for such a trespass is the gross value of the ore in place, before it was disturbed and not the net product or gross proceeds; and the damages may be ascertained by deducting from the enhanced value, or gross proceeds, the cost of making the product at the time of conversion. In case of a willful trespasser, the measure of damages is the enhanced value or gross proceeds realized from the ore at the time of conversion with no deductions, and in such case the conversion takes place when the trespasser applies the proceeds to his own use, and the measure of damages is the enhanced value, or gross proceeds, realized from the ore without deductions, on account of any value the trespasser may have bestowed upon the ore by his labor.

Ryan v. Manhattan Big Four Mining Co. (Nevada) 145 Pacific Rep. 907.

INDIAN OIL LEASE—CONDITIONS PRECEDENT

The provisions in an order of court, authorizing a guardian to join with a minor Indian allottee in the execution of an oil lease on the allotment of such Indian, and providing that the lease should be subject to the approval of the Secretary of the Interior, and should be executed in accordance with the rules and regulations prescribed by him, and directing the guardian to make a full report when the order had been complied with, and requiring the bonus paid to be placed *in escrow* in a certain named bank, can not be regarded as idle and useless provisions, but must be taken as having a fixed and set purpose, and the provision requiring the approval of the Secretary of the Interior must be regarded as a condition precedent to be complied with in order to complete the execution of the lease contract and if this provision is not complied with no estate vests in the lessee under the lease.

Westerville Oil Co. v. Miller (Oklahoma) 145 Pacific Rep. 344.

METHODS OF VIOLATING OIL LEASE

A plain and substantial disregard of the duty of a lessee to operate an oil

lease in such a manner as would be reasonably expected of operators of ordinary prudence, having regard to the interests of both the lessor and lessee, would be a breach of the lease, and this obligation may be violated as much by a too strenuous as by a too dilatory operation of the lease. A lessee of an Indian oil lease on an Indian allotment who is guilty of flagrant violation of the terms of the lease, in the manner of operating the lease, is in no position to come into a Court of Equity and compel the execution of a new lease.

Westerville Oil Co. v. Miller (Oklahoma) 145 Pacific Rep. 344.

OIL INSPECTION—INVALID TAX

When a legislature provides for the inspection of oil during transit, brought from other states, and fixes the fee for such inspection materially greater than the actual cost thereof, the measure becomes not only a police measure, but also a revenue measure, and to the extent that the fees for inspection exceed the reasonably necessary cost of such inspection; the tax is invalid, as in conflict with the commercial provisions of the Federal Constitution.

Barteles Northern Oil Co. v. Jackman (North Dakota) 150 Northwestern Rep. 576.

MINING CORPORATION—LIEN OF JUDGMENT ON PROPERTY OF NEW COMPANY

A judgment against an insolvent mining corporation for material and supplies furnished to bond holders while they are in the possession and management of the property, and used by them for the purpose of preserving the property as security of the bonds, continues as a lien on the property where the bond holders organized a new corporation which took the property and succeeded to the business of the former corporation, and where no consideration was paid for the purchase of the property by the new company, except the interest its incorporators owned as bond holders.

Spadra-Clarksville Coal Co. v. Kansas Zinc Co. (Kansas) 145 Pacific Rep. 571.

CONSTRUCTION OF MINING LEASE—ACTION FOR ROYALTY

A lessee covenanted with a lessor to enter upon the mining claim described and to work the same mine fashion in a manner necessary to good and economical mining, so as to take out the greatest amount of gold and precious metal possible, with due regard to the safety, development and preservation of the premises as workable mines, and to work all the gold-bearing gravel from rim to rim, and to deliver to the lessor as royalty and rent one-third of all gold and precious minerals mined from said premises during any single year, the royalty and rent increasing as the production of the mine increased in stated amounts; but the precise time of payment of the royalties and rents and whether they should be made in more than one instalment, was left to the discretion of the lessee. Under such stipulations the whole amount of the annual rent would be due at the end of the year, and if not paid an action could be maintained for its recovery, and the rule would apply whether the payments were to be made in gold dust, bullion or money. The fact that no place for the payment was stated would not prevent the accrument of a right of action in the lessor and no demand on the part of the lessor for the payment or delivery of the money or minerals was required before the lessor could sue, as the only purpose of a demand in such case is to afford the lessee an opportunity to pay without annoyance and expense of a suit. Under such a lease and in an action to recover the royalties and rents due, proof of a custom among miners that a lessee is permitted and has a right to cease working under the lease whenever he chooses so to do, is wholly immaterial, as the terms of a written contract or lease cannot be varied by proof of usage and custom can be shown only when the terms of a contract are obscure or uncertain, as the lessee must comply with the provisions of the lease as to the operation of the mining claim, and if he fails to do so and refuses to continue the work before the end of the term, the les-

sor is not required to work the mine himself, or obtain another lessee to do so as a condition to his right to recover damages for a breach of the lease.

Northern Light Mining Co. v. Blue Goose Mining Co. (Cal.), 143 Pac. 540.

RECITALS IN CERTIFICATE OF LOCATION

Where neither the Federal nor State statute requires the record of a location notice or certificate of a mining claim to contain more than the names of the locators, the date of location, and the description of the claim by reference to some natural object or permanent monument as will identify the claim, it is not necessary to state in such notice the fact of the discovery of mineral, or marking on the ground of the boundaries of the claim, or the posting of a location notice; and the recital of any of these facts in the record of a certificate of location is not even prima facie evidence of the truth of such recital, but all the necessary steps, aside from making and recording the location certificate must, in a controversy as to the validity of the claim, be established by proof.

Childers v. Laham (N. Mex.), 142 Pac. 924.

RAILROAD COMPANY LIABLE FOR BONDS OF MINING COMPANY

A railroad company owning the controlling interest in an insolvent coal company entered into a plan of reorganization of the coal company by which the new company issued bonds for the purpose of raising funds to carry on its enterprise and at the same time executed a lease of its mining property. The railroad company thereupon entered into a contract with the lessee by which it agreed to pay the coal company a stated sum per ton for a stated number of tons per year for coal shipped by it, the payments to be applied in discharge of the coal company's bonds. The coal lessee complied with its part of the agreement, was ready to and did mine the minimum amount of coal, and the railroad company on failure to furnish cars sufficient to transport the coal mined was held liable, in an action by the trustee of the

bond holders, for losses sustained by them for its failure to perform its part of the agreement and furnish cars necessary to transport the coal mined; and it was no defense for the railroad company, against its own wrong-doing, to claim that under the requirements of the Interstate Commerce Commission and the State Railroad Commission, it was required to distribute its cars among all coal operators on its line in the ratio of their relative needs, as the railroad owned and controlled the coal company and was manipulated by the railroad company for its own purposes and in its own interests.

Wheeling & Lake Erie Railway Co. v. Carpenter, 218 Fed. 273.

OIL AND GAS TAXATION

Oil and gas while lying in the strata or earth from which they are produced, constitute a sort of subterranean *faera natuera* which, if taxed at all, must be taxed as real property to the owner of the land under which for the time being they may lie, and cannot be taxed against the owner who has a mere lease or license to go upon the premises, search for, and if found, take them away; and this is the most scientific method for imposing taxation upon this class of property, as to undertake to tax an oil and gas lease is to undertake to impose a tax upon the illimitable vista of hope. Many instances are known where lessees have paid thousands of dollars bonus for a lease and have discovered no oil, and other instances are known where leases have cost comparatively nothing and oil has been found in enormous quantities. Whether oil is under any particular tract of land is beyond the ken of man until a well has been drilled, and even then no one can foresee how long a well will last or what its production will be. Under the system of taxation devised by the legislature of Oklahoma the wealth produced by the oil industry, the production of oil, the capital invested in its production, the oil on hand, and the oil in place, are taxed, and there is no justification in the law for any additional exactions.

Indian Territory Illuminating Oil Co., In re (Okla.), 142 Pac. 997.

PENDING STATE LEGISLATION

COLORADO

Senate bill, No. 227, introduced by Senator Affolter. This bill provides for a constitutional amendment which will allow in every sale of lands now owned or hereafter acquired by the State of Colorado, that surface rights only shall be conveyed and all coal, oil metals or other mineral substances of every kind, excepting sub-surface water, only, shall be reserved to the State of Colorado, together with the rights necessary for mining, extraction sale and distribution of the products mined. The State board of land commissioners are given administrative authority in connection with the mining and sale of the products. It is provided also that in the sale of the products mined, a price, as near the cost of production as may be lawful or practical, is to be charged. Ten per cent. of the proceeds of all coal so mined is to be paid into the school fund. A like amount goes to the treasury of the State to constitute a sinking fund for the payment of bonds issued under the provisions of the bill. The State Board of Land Commissioners is given ample power to carry out all possible contingencies that may arise in this work.

PUBLIC UTILITY

Senate bill, No. 326, introduced by Senator Affolter. This bill provides for an amendment to the constitution to enable the qualified electors to vote on the question of mining coal within the State for sale or distribution in whole or in part, within the State, and the declaration of this industry as one devoted to public use and every firm or corporation engaged in mining coal for the purpose aforesaid, is declared to be engaged in a public service. The general assembly is given the power to provide a law for a board, bureau or special court to exercise jurisdiction over and to adjust all disputes and controversies arising between any such public utility and its employes, and to make and enforce decrees in such

matters and for such regulation as to prices, services and practices to be in force through the board, bureau or special court, as the legislator may deem best suited to protect the inhabitants of the State against the results of strikes, lock-outs, cessation of operation, or uniform prices and practices.

MONTANA

House Joint Memorial, No. 8, introduced by Mr. Burnett, memorializing and petitioning Congress, concerning the congressional act approved February 22, 1889, in which it was provided that public lands donated to the States of North Dakota, South Dakota, Montana and Washington may be leased for periods of not more than five years in quantities not exceeding one section to any one person or company.

The memorial recites that in order to secure the exploration and development of coal, oil and gas resources it is necessary that leases be executed by the State of Montana granting authority to its lessees to explore such coal, oil and gas resources and to extract the same from its lands and to use as much of the surface as may be necessary therefor upon the payment of a proper rental or royalty. Congress is asked to amend the act so as to permit the several States named, including the State of Montana, by its proper officers to execute leases for the exploration and extraction of the aforesaid minerals for such periods of time as may be determined by or under the legislative authority of the said States.

ASKS FOR DEPUTY INSPECTOR

Senate bill, No. 145, introduced by Mr. O'Shea, providing for the appointment of a deputy coal mine inspector to be under the supervision of the State coal mine inspector.

WANTS EMPLOYMENT OFFICE

Senate bill, No. 147, introduced by Mr. O'Shea, creating a free employment office. The bill provides that the commissioner of labor and industry shall be ex-officio State employment agent; county clerks to be ex-officio State employment agents. County clerks shall keep records of the names and occupation of all those seeking employment at their offices and shall assist them to secure employment within the county where application is made, and in case no employment is found therein, to notify the State employment agent. County clerks are empowered

to make use of long-distance telephones and newspapers for the purpose of aiding the worthy unemployed to find employment and are authorized to expend from their respective county funds not to exceed \$25 a year for telephone tolls and newspaper advertising. The commissioner of labor and industry shall notify the various county clerks as to the demand for laborers and also of the surplus laborers in the counties of the State to the end that employers and employes may be placed in communication with each other. The provisions of the act do not apply to counties where there are free employment offices or free municipal employment bureaus maintained.

PROVIDES FOR LICENSE

House bill, No. 396, introduced by Mr. Jorgensen, making it unlawful for any person to operate any electric hoisting engine or any air hoisting engine when either is used in lowering or hoisting men, except in elevators in buildings without first obtaining a license therefor from the State boiler inspector or one of his assistants. Three years' experience in the operation of an electric hoisting engine or an air hoisting engine and knowledge of the construction and operation of such are made qualifications. A fine of not to exceed \$500 or imprisonment of not to exceed six months, or both, are penalties for violation of the act, which applies to the operator and likewise to the owner, employer or manager who knowingly permits any unlicensed person to operate an elevator.

PROVIDES TERMS OF PAYMENT

House bill, No. 420, introduced by Mr. Corr, making it unlawful for any employer or authorized agent to neglect or refuse to pay in lawful money of the United States, any employe at the time of termination of his employment, either by resignation or discharge, any salary or wages due. Payment must be made within five days at the place where last employed or at some designated place within the State, the employer to furnish transportation to such place where payment is made, provided any employe may enter into a written agreement designating the time and place of payment. Whenever an employer or authorized agent neglects or refuses to pay wages or salary due, as provided in the act, as a penalty for the violation for such nonpayment the wages or salary of the employe shall continue from the date of resignation or discharge at the same rate as if he were still in service until full and complete settlement is made, provided, however, that such wages or salary shall not continue for more than ninety days, unless action for the recovery of the same shall have been commenced within that time. Employes shall have such lien and other legal rights and remedies for the protection and enforcement of such wages or salary as they would have been entitled to,

had they rendered services therefor in a manner at last employed.

SPECIFIES SCHOOL NAMES

Senate bill, No. 181, introduced by Mr. Brower, providing that the institution of learning located in Missoula shall hereafter be designated as the University of Montana; that the institution of learning located in Butte shall hereafter be designated as the Montana State School of Mines. The institution of learning in the city of Bozeman shall be designated the Montana College of Agriculture and Mechanic Arts, and that in Dillon shall be known as the Montana State Normal College.

EMPLOYMENT AGENCIES

Senate Bill No. 147, introduced by Mr. O'Shea. This bill provides for the creation of free employment offices. The Commissioner of Labor and Industry is made ex-officio State Employment Agent. County clerks are authorized to maintain offices wherein the worthy unemployed may register. The county clerks are authorized to make use of long-distance telephones and the newspapers of the county to find employment for all worthy unemployed. The Board of County Commissioners in each county is instructed to maintain a room, in the court house, if possible, wherein those who seek employment may remain in comfort during the day.

PENNSYLVANIA

House bill, No. 2, introduced by Mr. Garner, amending the present act, which requires weekly examination by the mine foreman or one of his assistants of all accessible parts of an abandoned portion of a mine in which explosive gases have been found to include the provision that the mine foreman or his assistant making such examinations shall be accompanied during such examinations by at least one miner.

TO SAFEGUARD CAGE OPERATION

House bill, No. 3, introduced by Mr. Garner, requiring the employment at all mines employing 100 or more men of an additional competent hoisting engineer to assist the regular hoisting engineer during the hours the men are being lowered into the mines and being hoisted to the surface. Violation of the provisions of the act is subject to a penalty of \$100 for each day of the violation.

REQUIRES EXPERIENCE

House bill, No. 24, introduced by Mr. Garner, amending the act relating to qualifications of mine foremen and assistant mine foremen

by providing that at least five years of the practical experience as a miner necessary to secure a certificate of qualification shall have been *in the actual work of cutting coal at a working face*.

WANTS OLD FIRE PUT OUT

House bill, No. 33, introduced by Mr. Jones, appropriating \$150,000 of State funds to be used under the direction of the chief of the State department of mines toward extinguishing the mine fire within the limits of the city of Carbondale, in Lackawanna County. The bill recites that the fire, which has been burning for ten years is spreading and threatens destruction to a large part of the residential section of the city, and also by reason of sulphurous gases renders living in that section uncomfortable and injurious to health. The city of Carbondale has been unable to check the fire. The bill further provides that, in case additional amounts for the purpose are needed Lackawanna County is authorized and empowered to raise such amounts by tax levies.

RESTRICTS HOURS OF LABOR

House bill, No. 60, introduced by Mr. Becker, forbidding the employment in certain occupations and under certain specified ages of minors, restricting their hours of labor and stipulating certain conditions of their employment, requiring employment certificates and badges, prescribing rules for the issuance and reissuance and the recording of certificates issued, and providing that the commissioner of labor and industry or the chiefs of the department of mines shall, under certain conditions, determine and find whether occupations are within the prohibitions of the act and providing for the publication of such findings, requiring certain abstracts and notices to be posted providing for the enforcement of the act by officers of the department of labor and industry and the department of mines, by the superintendent of public instruction, by officers of the boards of school, directors and police officers. The bill prohibits work by children under fourteen for compensation anywhere during school hours; prohibits work by children under sixteen in injurious occupations; work by children under eighteen in extra-hazardous occupations; work by any minor in saloons. Children under sixteen years of age are prohibited from working for compensation for more than six days in any one week or more than fifty-four hours in any one week, or more than ten hours in any one day. In any one week where holidays are observed by the employer minors may be employed for not to exceed two and one-half hours over time during three of the working days of such week. Children under sixteen are prohibited from working for compensation before six o'clock in the morning or after seven o'clock in the evening, except where overtime is based

on a holiday observance during the week. Not less than forty-five minutes shall be allowed to every male under eighteen years of age and to every female minor employed at any occupation for compensation of any sort for the midday meal, which period shall not be considered a part of the hours of labor.

Whenever, however, such male or female is employed for less than eight hours in any one day the time allowed for the midday meal may be reduced to not less than thirty minutes. Employes shall not be required to remain in the workrooms during the time allowed for meals. No male under eighteen years of age, and no female minor shall be employed for more than six hours continuously at any occupation for compensation without an interval of at least forty-five minutes and no period of less than forty-five minutes shall be deemed to interrupt the continuous period of work. When such employment is for a period of less than eight hours the interval between work periods may be reduced to not less than thirty minutes. Employes shall not be required to remain in the workrooms during their rest periods. Street trades or occupations are prohibited to boys under fourteen and girls under twenty-one. No boy under sixteen years shall engage in street trades or occupations for more than six days in any one week, or more than fifty-four hours in any one week, or more than ten hours in any one day or before six o'clock in the morning or after seven o'clock in the evening of any one day. Employment of children under sixteen years of age at any occupations for compensation during school hours is prohibited, unless such children, so employed, shall have received an employment certificate.

Employment certificates will be issued by school authorities. Such certificates shall include the school record of the child and a certificate signed by a physician stating that the child has been thoroughly examined and is in sound health and physically able to be employed in the work intended to be done. Employment certificates shall also contain proper evidence of age. The certificate shall be issued free; it shall contain a description of the one to whom issued. Special summer employment certificates are provided for. Boys under sixteen years of age employed for compensation shall wear employment badges. Employers of males under eighteen years of age or female minors for compensation shall keep posted at a conspicuous place a printed abstract of the provisions of the act and a schedule of the hours of labor. The schedule of the hours of labor shall contain the name and date of birth of each employe, the maximum number of hours each shall be required or permitted to work, etc.

When, in the judgment of any officer, charged with the enforcement of the act, any employe is under the regular age permitted he may enforce proof of age. Penalties are provided for violation of the act, not more

than \$50 fine being imposed for the first offense, and \$200 dollars for the second. Fines for each and every day shall have continued after official notification of violation of the act. Special penalties are provided in cases of hindering the enforcement by an officer of the provisions of the act, also special penalties for aiding or abetting any minor to violate any provisions of the act; a maximum of \$50 for the first offense and \$200 or imprisonment of not more than sixty days, or both, for the second offense. The improper issuance of certificates or badges is punishable by fines, the maximum of which is \$200, imprisonment for sixty days, or both. Parents or guardians who compel or permit minors to work in violation of the provisions of the act are subject to a fine of not to exceed \$25 for a first offense, and for a second offense not to exceed \$50 dollars or imprisonment of not more than thirty days, or both. Minors who disobey street trades' provisions after a second violation may be arrested and dealt with as delinquent. Revocation of badges is provided for in cases of violation of the act. The act repeals previous acts, providing for health and safety of minors and regulating hours of employment. September 1, 1915, is named as the date of the taking effect of the act.

WANTS WAGE SCALE CHANGED

House bill, No. 253, introduced by Mr. Powell, amending the existing act relating to the per diem pay of the members of the mine inspector's examining boards by stipulating that the members and clerk of the board shall receive \$10 per day for every day actually engaged and reimbursement of all necessary expenses incurred.

House bill, No. 289, introduced by Mr. Reynolds, restricting the hours of labor and regulating the employment of minors. Work by children under sixteen in injurious occupations is prohibited. Occupations regarded as injurious are named specifically and at length in the bill. Work in any bituminous coal mine or in any other mine, tunnel or excavation work by children under eighteen is included in this provision. Work in extra hazardous occupations is prohibited; also work by any minor in saloons. The remaining provisions and penalties are substantially the same as those in House bill, No. 60, introduced by Mr. Becker.

House bill, No. 421, introduced by Mr. Myers, making it unlawful to use in a bituminous coal mine any lamp other than a portable electric mine-cap lamp, of the style or type approved by the Federal bureau of mines. An ordinary gas testing lamp, known as a "safety lamp," may be used as directed by the chief of the Pennsylvania bureau of mines, but only for the purpose of examining working places and for testing the gaseous conditions of air currents in the mines. Standards of requirements in connection with the use of

portable electric mine-cap lamps are enumerated in detail. Violation of the provisions of the act are punishable by a fine of \$25 for the first offense, and \$100 for the second offense. Conviction for a second offense includes imprisonment not exceeding one year.

SPECIFIES CAGE CONSTRUCTION

House bill, No. 553, introduced by Mr. Dawson, providing that persons shall not be conveyed into or from anthracite coal mines by way of perpendicular shafts except in cages of steel frame construction. A penalty of \$100 a day for each day the mine is operated in violation of the provisions of the act is provided.

EXPERIENCE PROVIDED

Senate bill, No. 160, introduced by Mr. Catlin, amending the present act relating to certificates of qualification to mine foremen and assistant mine foremen. Practical experience in an anthracite coal mine of Pennsylvania as a miner cutting or blasting coal or rock at the face of the gangways, airways, breasts, chambers, or other working places is made a condition in addition to those already enumerated in the present law.

PROPOSES CERTIFICATES

Senate bill, No. 279, introduced by Mr. Burke, requiring that all those employed in any bituminous coal mine shall first obtain certificates of competency and qualification from a miners' examining board. Those miners, however, actively employed in the State, when the act becomes effective, who have been engaged in mining at least two years, are exempt from its provisions, and entitled to a certificate. Any certified miner may have one uncertified person working with him and under his direction, for the purpose of learning the business of mining and to become qualified to obtain a certificate. In cases where a miner holds a certificate and has two or more sons who do not hold certificates they shall have the right to work with him, if he so desires. A miners' examining board, to consist of three practical miners of at least five years' continuous experience and who have been residents for at least one full year in the county in which they are appointed, is provided for, appointments to be made by the court of common pleas. The members of the board shall receive \$3.50 per day for each day actually engaged in official duties and legitimate expenses. Salaries and expenses of the board will be paid from fees, each applicant for examination to pay a fee of \$1. The surplus from fees shall be paid to the State treasurer. Violation of the provisions of the act are punishable by a fine of not less than \$100 and not more than \$500, or imprisonment of not less than thirty days nor more than six months or both.

UTAH

House bill, No. 175, introduced by Mr. Bevan, creating the office of inspector of metalliferous mines, defining the duties of the inspector and providing an appropriation to defray expenses. The bill provides for the appointment by the governor for a term of four years of an inspector of metalliferous mines at a salary of \$2,000 a year, and necessary traveling and office expenses. The inspector shall examine and inspect mines, and refusal to admit the inspector or his assistants to mines for the purpose of making necessary examinations and inspections shall subject owners, agents, managers or lessees who so refuse to a fine of not to exceed \$500 for each and every offense.

The owner, agent, manager or lessee of each coal or hydro-carbon mine shall make an accurate and comprehensive map or plan of the workings of each mine, a copy of which shall be furnished the inspector and another copy to be kept at the mine for the inspection of the inspector or his employees. An accurate showing shall be made on the map or plan at least once every six months of all additional excavations which have been made in the mine. Maps or plans of mines may be made under the direction of the inspector at the expense of the owner, agent, manager or lessee, wherever the inspector shall have reason for believing that maps or plans furnished him are materially inaccurate or imperfect. A statement shall be rendered the inspector of mines annually, detailing the output of each mine, distribution of its products, pounds of powder used, number and nationality of men employed, days worked and number of fatal and non-fatal accidents. Notice of the opening of new mines or quarries must be made to the inspector of mines within thirty days of such opening. The inspector shall make and enforce such reasonable rules and regulations as he may deem necessary for the safe and efficient operation of metalliferous mines. He shall prescribe a code of bell signals and the proper operation of hoisting apparatus as is in general use in metalliferous mines throughout the country. He shall also prescribe proper and reasonable regulations for cages, timbering, ventilation, blasting and such other matters in connection with the operation of metalliferous mines as he may deem necessary. The inspector shall examine and inspect every metalliferous mine in the State at least once every three months and oftener if necessary. He shall make an annual report to the governor, showing the condition of all mines in the State, the report to not only be comprehensive as to the condition of the mines, but also as to the home and working conditions of the miners.

WOULD HAVE INSPECTOR

House bill, No. 189, introduced by Mr. McShane, providing for the appointment of an

inspector of mines and a deputy inspector. It shall be the duty of the inspector and deputy to inspect all clay and metalliferous mines and quarries and to report annually to the governor on the condition of all mines and quarries and also to examine into the conditions as regards the safety of the workmen employed in all mines and quarries and the machinery, ventilation, drainage and the method of lighting and using lights and to examine into all matters connected with the working safety of persons in such mines and quarries, and to give directions providing for the better health and safety of persons employed in mines and quarries. Penalties and refusal to permit examination by the inspector or his deputy are provided. The inspector is authorized to order improvements and changes in mines and notice whenever and wherever deemed by him necessary. The bill provides that no explosive oil shall be used or taken into mines for lighting purposes, except when used in approved safety lamps or when used by day men and when diluted with a non-explosive oil; the quantity of oil when stored in mines is not to exceed five gallons, except when in tight cans approved by the inspector of mines; prescribes regulations as to the oiling and greasing of cars, and makes compulsory the reporting of explosions or any other accidents in any mines or quarries where fatalities occur as a result of such accidents. The inspector or deputy shall visit the scene of the accident and give such directions as may appear necessary to secure the future safety of the men; shall proceed to investigate and ascertain the causes of the explosion or accident; make a record thereof and, where deemed necessary, hold an investigation, having the power to compel the attendance of persons to testify and to administer oaths and examinations, the cost of such investigations to be paid by the county in which the accident occurred.

WISCONSIN

Senate bill, No. 50, introduced by Mr. Burke, amending the present workmen's compensation law by increasing generally by 25 per cent. the schedule of compensation for bodily injuries.

Nicaragua in 1914 produced gold to the value of \$1,063,076, of which amount about 63 per cent. came to the United States.

Australia in 1914 produced 2,048,901 fine ounces of gold, as against 2,205,061 in 1913, and 2,321,343 in 1912.

Australia shipped 356,000 tons of coal less to Chile in 1914 than in 1913.

CENTRAL OF NEW JERSEY IS FOUND GUILTY IN REBATE CASE

Interstate Commerce Commission Reviews Findings In Matter of Concessions to Coal Company; \$185,000 Fine Possible

A verdict of guilty in 185 counts against the Central Railroad of New Jersey, for granting rebates and concessions to the Lehigh Coal and Navigation Company, was returned by the Federal jury, sitting at Trenton, N. J. The indictment was under the Elkins Act. The minimum penalty on each of the 185 counts is \$1,000.

The facts upon which the prosecution was based were given out by the Interstate Commerce Commission as follows:

The Lehigh Coal and Navigation Company owns and operates extensive anthracite coal mining properties in the Lehigh region. Furthermore, it owns a railroad extending from these coal properties to Phillipsburg. The L. C. & N. Company, in 1871, leased this railroad to the Central Railroad of New Jersey, at an annual rental which amounts to \$2,043,000, owing to a maximum provision in the lease. One of the covenants of the lease provided that the L. C. & N. Company would ship most of its coal over the Central Railroad of New Jersey, and in return the Central Railroad of New Jersey covenanted to accord a lower basis of rates to the L. C. & N. than was enjoyed by other shippers in the Lehigh region. This lease was made prior to the passage of the Interstate Commerce Act and is for a term of 999 years.

ALLOWANCE BECOMES KNOWN

In the course of the anthracite investigation, it developed that on all shipments of coal by the L. C. & N. Company from the Hauto and Nesquehoning districts, the Central Railroad of New Jersey paid to this shipper an allowance out

of the published rate of from eighteen to twenty-three cents per ton. To give this payment the color of lawfulness, the Central Railroad of New Jersey published in its tariffs a note, reading as follows:

"In compliance with the tenth covenant of the lease from the Lehigh Coal & Navigation Company, under which the Central Railroad of New Jersey operated the Lehigh & Susquehanna Railroad, a lateral allowance is made out of the herein named rates, to the Lehigh Coal & Navigation Company, on all anthracite coal originating on the latter's track in the Panther Creek, Nesquehoning and Hackelbarnie districts, mined and shipped by it when coming via the Hauto, Nesquehoning and Mauch Chunk gateways."

Upon referring to the lease, we find the tenth covenant provides as follows:

"The parties of the second part (C. R. R. Company, of N. J.) further covenanted and agreed that on coal delivered for transportation by the parties of the first part (L. C. & N. Company) on sidings at the northern end of Nesquehoning tunnel, the rates of transportation shall not exceed the rates charged at the same time from Penn Haven to the same points on coal from the Lehigh region, either by the parties of the second part, or by the Lehigh Valley Railroad Company."

EXCEEDED \$400,000 ANNUALLY

Thus it appears that the traffic note and the lease to which it refers merely give notice that an allowance is paid, but do not state what the allowance is. Our investigation shows that the allowances, when paid in this way by the C. R. R. of New Jersey, to the L. C. & N. have amounted to over \$400,000 a year for several years past. The traffic note, above quoted, refers to these payments as lateral allowances, although, in fact, the shipper performs no service for the railroad company.

The defense at first urged that the act did not require the publishing of allowances under Section 15. As the trial progressed it shifted its ground and contended that these payments were not allowances under Section 15, but payments in the nature of rent for the use of the railroad furnished by the shipper. The Court, in effect, charged the jury that whether or not these payments purported to be allowances under Section 15, or rent payments, or for any other purpose, so long as they were payments out of the lawfully filed rates, since they were not definitely published, they amounted to unlawful rebates.

P. R. R. INDICTED

SERVICE FURNISHED BY COAL COMPANY HELD TO BE ILLEGAL

An indictment on five counts has been returned against the Pennsylvania Railway Company for violation of Section 1 of the Elkins Act. The Interstate Commerce Commission, in a formal statement issued March 11, says in regard to this case:

The Glen White Coal and Lumber Company, operating mines one and one-half miles from Kittanning Point, Pa., operates a private railroad which connects with the Pennsylvania line at that point.

The service performed by the shipper was to haul the empty cars from the junction to the mines and return with loaded ones, using its own engine. For a long period of time the Pennsylvania Company has been paying allowance to the Glen White Company for this service over the private road, of from ten to eighteen cents per ton. Prior to July 1, 1912, the Pennsylvania Company did not publish this allowance in its tariffs. On this set of facts indictments were returned March 10, covering shipments moving prior to the publication of the allowance on July 1, 1912, on which the unlawful rebates were made.

INCREASE NOT ALLOWED

COAL RATES IN PENNSYLVANIA AND MARYLAND TO REMAIN UNCHANGED.

With regard to the matter of bituminous coal rates to Baltimore and other points the Interstate Commerce Commission has handed down a decision providing that the proposed increase in rates

for the transportation of bituminous coal from mines in Pennsylvania, Maryland, and West Virginia to Philadelphia, Pa., Wilmington, Del., and Baltimore, Md., for transshipment to points inside the capes of the Delaware and Chesapeake bays, are not justified. Tariffs naming the increased rates are required to be canceled.

If rail carriers be permitted to establish rates in connection with water carriers upon a basis which will equalize shippers at various points along the waterway, they will absorb the benefit which should accrue to the public of the lower cost of water transportation, the Commission held.

Commenting on the decision, Commissioner Meyer said:

From what has already been said, it is plain that respondents' reasoning leads to the conclusion that the charge for transporting coal for delivery over the piers for transshipment to points within the capes must either be high enough so that a consignee by water will in no case receive his coal at a total charge less than the track delivery rate or else a different rate must be published for each consignee at points within the capes dependent upon his particular cost of boat service and discharge. In case the second alternative were adopted the carriers would absorb whatever saving a consignee might effect by the installation of improved plants for unloading water-borne coal. The consignee who unloaded his coal from the barges by wheelbarrow would receive it at no greater cost than the consignee equipped with facilities for unloading coal with the least possible expense.

Chairman Harlan was unable to agree with the other members of the Commission and said in his minority report:

As I understand the issues and the record in this case, the respondents have fully justified the increase in rates proposed by them in the tariffs which, under the majority report, they are now required to cancel. For these reasons I am compelled to withhold my assent to the findings and conclusions of the majority.

LOSES CASE

NEW ENGLAND COAL AND COKE COMPANY DECISION FAVORS CARRIERS

A ruling of much interest to exporters of coal was handed down by the Interstate Commerce Commission March 10.

In the case of the New England Coal and Coke Company versus the Norfolk and Western Railway and other carriers, the Commission held that, where the carriers make a charge for dumping coal into boats from their piers in harbors, in addition to the regular transportation rate, this practice is not unlawful. The complaint was dismissed.

In support of its contention the New England Coal and Coke Company cited a considerable list of authorities. Attention was called, for instance, to the following Supreme Court ruling:

"The transportation of live stock begins with their delivery to the carrier to be loaded upon its cars, and ends only after the stock is unloaded and delivered, or offered to be delivered, to the consignee, if to be found, at such place as admits of their being safely taken into possession."

The defendants transport coal from points without the State of Virginia to the ports named for transshipment. At those ports large coal piers, equipped with numerous devices designed to expedite and economize the transshipment of coal have been provided by defendants, says the commission.

When the cars loaded with coal reach the port they are run into a classification yard, from which a yard engine shoves them up an incline on the pier. Upon reaching the top of the incline, called the "knuckle," brakes are applied to the cars to hold them in position, and the engine returns to the yard. Laborers, usually hired by stevedores who work under contract with the carrier, then release the cars, which move slowly down the other side of the incline, over track scales, and toward the coal chutes. When the car reaches the chute it is stopped, the bottom of the car is opened, and the coal falls through the chute into the hatchway of the vessel. Some vessels are so constructed that little leveling is necessary; in others, especially sailing schooners and other vessels of the older type, the coal is apt to pile up in the shape of a pyramid, necessitating more leveling. The complainant's vessels are so constructed that they can be tilted during loading, thus permitting a more even distribution of the coal.

The complainant asks that the transportation rate include dumping. In the past both dumping and trimming charges, when imposed by the carrier in addition to the rate to the port, have been paid by the complainant.

The commission sums up its decision in the following statement:

"When delivery must be made in a peculiar way, the carrier is entitled to an extra charge therefore."

TO HEAR COAL CASE

Oral argument, in the matter of coal rates from Illinois mines to Omaha and other points, will be held by the Interstate Commerce Commission in Washington, April 15.

REPARATION GRANTED

In the case of the Eagle Smelting and Refining Company versus the Baltimore and Ohio Railroad Company, reparation was granted the smelting company by the Interstate Commerce Commission.

MUST INSPECT TENDER

Another piece of eleventh-hour legislation was an amendment to the act to promote the safety of employees and travelers upon railroads, by compelling common carriers engaged in interstate commerce to equip their locomotives with safe and suitable boilers and appurtenances thereto. An amendment was attached in the House, which later passed the Senate, and was approved by the President March 4, which provides for an inspection to include the entire locomotive and tender.

AMENDS COMMERCE ACT

An important amendment to the act to regulate commerce, which became a law on the last day of Congress, was that of Senator Cummins, of Iowa. Section 7 of the act is amended to provide that carriers accepting shipments moving interstate would become liable to the shipper for the full value of the shipment despite any limitation of liability in bill of lading, way-bill, etc., unless actual value of property is declared in writing by shipper

at time of shipment and such value becomes a factor in rate made on shipment, or where, in cases of extraordinary risk, the Interstate Commerce Commission has affirmatively established a rate based upon carrier's liability at less than the full value of the shipment. Amendments which prohibit carriers from allowing less than ninety days for notice of filing claims by shippers, four months for filing same, and two years for the institution of suits were added. The House added a proviso limiting the liability of a carrier for loss, damage or injury in the case of shipments moving interstate or to an "adjacent foreign country" to shipments made on a through bill of lading.

COAL SHIPMENTS HEAVIER

The statement of the shipments of coal and coke over the lines of the Norfolk and Western Railway for January shows that the month's shipments amounted to 1,957,153 tons, a decrease of 127,406 tons from the amount shipped in January, 1914, when 2,084,559 tons were hauled over the lines, but an increase of 242,913 tons over the preceding month of December, when 1,714,240 tons were shipped.

WINS BIG REPARATION CASE

One of the largest reparation claims allowed by the Interstate Commerce Commission this year is that granted in the case of the Tennessee Copper Company versus the Louisville and Nashville Railroad Company. On account of unreasonable rates charged for the transportation of dynamite from Kenvil and Gibbstown, N. J., to Copper Hill, Tenn., a refund of \$4,578.18 was ordered. The carrier also was instructed to pay interest on that amount from February 1, 1912.

COAL CASE DISMISSED

At the request of the complainant, the case of the Coal Operators' Traffic Bureau of St. Louis, versus The Illinois Central, has been dismissed by the Interstate Commerce Commission.

FILES REPLY BRIEF

In the case of the Pittsburgh Steel Company vs. The Pittsburgh and Lake Erie Railroad Company, which is before the Interstate Commerce Commission, the following contention is made in a reply brief submitted by the steel company:

It is the contention of the complainant that the revenue under existing tariff rates on inbound shipments to such plant and the revenue derived from the outbound shipments from such plant includes the placing of the inbound load at a designated point within the plant and the placing of the empty for loading and the taking of such load out of such plant just as much so as cars similarly handled at other industries not shown whatsoever in the so-called Spotting Tariff under suspension, likewise in the placing of a car within the terminal warehouses and storage warehouses, or public team tracks.

INDIANS MICHIGAN'S FIRST MINERS

The copper product of Michigan is largely native and is considered for some purposes superior to "electrolytic" copper. "Lake" copper, as the product of Michigan is generally known in the trade, sells generally at about a quarter of a cent a pound above other coppers. The mining of copper in Michigan is of prehistoric origin, the metal having been used by the North American Indians before the advent of the white man. The development of copper mining, however, began in 1845, and since that date to the close of 1913 the production has amounted to over 5,335,000,000 pounds, or about thirty per cent of the total output of the United States.

MICHIGAN'S COAL YIELD

Reports from Michigan to the United States Geological Survey, indicate that the production of coal in 1914 was about the same as in 1913, when it amounted to 1,231,786 short tons. The manufacturing industries contiguous to the Michigan mines have been using about the same quantity of coal as in 1913, and the domestic trade which furnishes the market for the lump coal has been about the same as for previous years. There have been no strikes, and labor and transportation facilities have been unusually good.

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EDITORIALS

BLOCKING METAL MINING

The Wyoming legislature recently passed a resolution, condemning the proposed leasing policy of the administration, citing this plan as constituting a "dangerous menace to a Republican form of government." Secretary of the Interior Lane, in his reply to Governor Kendrick, of Wyoming, through whom the memorial was transmitted to the secretary, after calling attention to some errors in the Wyoming resolution concerning the extent of the acreage withdrawn, which he characterizes as misleading, closes his statement as follows: "and that nowhere is metal mining development blocked by these withdrawals, the law specifically permitting metaliferous mineral entries on withdrawn lands."

It is probable that Secretary Lane is fully convinced that this latter statement is correct, but the MINING CONGRESS JOURNAL would like to call attention to one specific case now awaiting decision in the Interior Department. The exact details of this case are not at hand, but in a general way the following statement is correct:

Several years ago Mr. Bolthoff, of the Hendrie and Bolthoff Machinery Company, of Denver, Colo., came into possession by location or otherwise, of sev-

eral mining claims and a mill site in Clear Creek County, Colo. After some years of work and the expenditure of many thousands of dollars upon the claims, he began the erection of a mill upon the mill site to treat the ore body which his development work had disclosed, and at the same time applied to the Government for a patent upon his mill site and mining claims. After spending something like \$25,000 in permanent construction work upon a mill and after purchasing machinery of approximately equal value with which to complete it, to his great surprise, he was met by the determination of the land department that the mill site connected with his mining claims could not go to patent because of the fact that the valley had been withdrawn from entry as a water power site. An appeal was taken to the Secretary of the Interior. Mr. Bolthoff employed attorneys, sending them to Washington, and after considerable effort on the part of the senators from Colorado a hearing was finally arranged before a subordinate of the Interior Department.

The legal right of the appellant to patent upon a location made before the withdrawal order; his equitable right growing out of the fact that in good faith he had expended nearly \$100,000 in making valuable a property otherwise absolutely worthless; the fact that the mill would not interfere with the use of the land for power-site purposes, were all ably presented, by the attorney, to the department. A special plea was made for an early decision of the question on the ground that a large enterprise must remain at a standstill until the question at issue was determined.

This was several months ago. No action has been taken by the department. The enterprise is halted. *This, Mr. Lane, is one instance where "metal mining development is blocked by these withdrawals."* If further examples are needed the readers of the MINING CONGRESS JOURNAL will supply them.

The only ground upon which Mr. Bolthoff can hope for the granting of his patent is that this mill site was filed on

before the withdrawal order was made. Had it been after the withdrawal, there would be no hope for his getting patent until the federal administration shall entirely reverse its theory of handling western lands. Had Mr. Bolthoff known that his right to patent would be questioned, he would not have spent \$60,000 in the development of those claims; he would not have undertaken to build a mill for the treatment of ore which he had developed. The fear of trouble of this sort is "blocking metal mining development" in the West.

If Mr. Lane will satisfactorily show that mining development is not retarded by such experiences as that of Mr. Bolthoff, he will have taken a long step toward convincing the people of the West that his views concerning a federal leasing system are right. Until this is done, the people of the West will believe he is wrong.

THE FOSTER BILL

The passage of the Foster bill by the United States Senate, and its approval by President Wilson on March 3, 1915, marks one further step in progress in an effort which has been under way for several years. This bill, the text of which will be found in full on another page of this issue of the JOURNAL, provides for the establishment of ten mining experiment stations and seven mine safety stations, it being the understanding that the mining experiment stations are designed to solve the problem of ore treatment, while the safety stations are to be movable safety cars provided with rescue and first-aid apparatus. The original bill provided for fifteen of these mine safety stations, but as eight stations had already been established, the number provided for in this bill was reduced to seven, making a total of fifteen. The bill also limits to three the number which can be established in one year.

The American Mining Congress has been urging this legislation for a long time, and different kinds of bills have been introduced and considered by Congress. The present bill carries no appropriation and before it can be made

effective it will be necessary to secure an appropriation from Congress. While it is true that with the appropriation the work could have been done without the passage of the present bill, yet this enactment marks another long step toward the achievement of what has been sought so long. It is hoped that the friends of this movement will again rally to its support in urging Congress for appropriations during its next session.

THE WEST AND THE

LEASING BILL

The real West—the Rocky Mountain West—that portion of the United States in which the apex law and the law of appropriation of water are in effect, was greatly relieved when Congress adjourned without passing the so-called "Leasing" and "Water-Power" Bills. This relief is justified by the hope that a future Congress may be made to realize the conditions which exist in the West and will not, in order to experiment with a theoretical scheme, still further restrict and retard western development. It is not that Congress does not want to do the right thing by the West, but that it does not understand western conditions and has not been brought in contact with the cumbersome methods which always prevail when the Federal Government undertakes to administer business affairs at a point far distant from the seat of government.

Secretary of the Interior Lane, when on a recent visit to Utah, is reported to have made the following statement concerning these bills:

It seems to me that you people out here in Utah are overlooking some things which are decidedly favorable to the future upbuilding of the West and especially this State right here. There are now pending before Congress two bills which mean so much to this State, yet you people are not fighting for them; I never hear a word from you in favor of them. The first is the water-power bill, providing for the development of water-power rights on the public lands.

Nothing is so important to Utah as the development of water-power, and you know what an immense amount of water-power is going to waste here. The bill means the investment of millions of dollars of outside capital. I know of one interest that is ready

to invest \$40,000,000 in western water-power development if this bill is passed.

Under the present laws, leases of water-power rights on public lands are revocable by the Secretary of the Interior. Under the bill I have introduced, it is possible to develop these sites, the rights to which may be transferred to city or State after fifty years. There is no reason why all this water should go to waste. With the power that can be developed the water can be raised from the rivers for irrigation. You know what greater irrigation means to Utah.

The attitude of the present water-power interests in this section seems to be that further development of the wonderful resources here will only have the effect of reducing the profit on the present comparatively small investments. The West should be developed and is entitled to this legislation.

The other bill is the leasing measure. Nobody knows but that there may be oil deposits in Utah. California did not have any more idea concerning oil ten years ago than you people have at the present time. Yet look what California is producing annually in the way of oil. You have large deposits of phosphate in Southern Utah that are at the present time impossible of development. Under the leasing bill it would be possible for the deposits to be taken up in large tracts and the product successfully marketed.

But I hear nothing from the Utah people concerning either of these bills. You people have no real excuse to offer if you do not profit by these opportunities and induce outside capital to come in and help develop your State, for you elect your representatives to Congress. Who are they representing if not the best interests of Utah?

The reason that the people of Utah have not been heard in favor of these proposed bills is because the people of Utah do not favor them. The reason why western members of the House and Senate oppose these bills is because they represent the best sentiment of the people of the States from which they come. The few western members of Congress who are ready to support this legislation do so, not because they favor it, but because they have been convinced that the present blighting hand of governmental restriction can be removed by no other method. They believe that the popular sentiment which controls Congress is unalterably opposed to the public land system which has made the West prosperous, the operation of which was suspended by the coal land and water-power site withdrawals by Presidential

order and that by no other plan can relief be secured.

If the Federal Government is to adhere for all time to the policy of recent administrations, then it may be better to fall in line and make the best of a bad situation. On the other hand if the West is right in its opposition to the restrictive policy, masquerading under the name of "Conservation," then it behooves the West to undertake a campaign of education through which Congress shall be brought to see that this policy will entrench monopoly, instead of preventing it; will hamper and restrict development; will add increasing expense to the operation of the Federal Government; will hamper the several state governments, so as to make extremely burdensome the maintenance of courts, schools and asylums and greatly hinder the carrying out of the guaranty of the several states to maintain a republican form of government.

One half of the land West of a North and South line drawn through the Eastern border of Colorado is still in Federal ownership. The laws must be enforced by the States over the whole area. This means that the privately owned land of these states must pay double taxation.

The taxes in most Western states, during each thirty year period are approximately equal to the value of the land. The privately owned land, less than one half the total area, must each thirty years pay enough in taxation to buy the other half of the land, in order to enable these states to live up to their contract with the nation, to maintain a republican form of government.

The West now has another opportunity to prevent the passage of these bills. Isolated protests will be of no avail. Even the protests of all western members of Congress and the Senate will not be sufficient; it will be necessary to convince the American people that the policy of Abraham Lincoln that the public lands are a national possession held in trust for the maturing states is best for the West and best for the country as a whole.

Will the West awaken to its opportunity?

HEROES CONTRASTED

In these times of world stress with the European nations at each other's throats officially murdering each other by the thousand, it warms the heart of an American to pause for a moment and take cognizance of what we as a nation are doing in an opposite direction. Last month the trained rescuers from the Federal Bureau of Mines succeeded, after four days' frantic effort, in rescuing forty-seven entombed men from certain death in the mine of the New River and Pocahontas Coal Company, where an explosion had taken place. These men, who were saved to their wives and babies, were, according to the telegraphic accounts, nearly all foreigners, former citizens of the nations that are now busily engaged in the slaughter of their brothers.

What a contrast to blood-soaked Europe? American Government rescuers risking their lives to save men of European blood in an American mine, while across the waters every diabolical agency that human ingenuity can contrive is being used to destroy life. Is it any wonder that the millions of people who have come to this country from foreign shores want to be Americans—Americans all the time and under all circumstances? Can anyone dare doubt the loyalty to this Government of the foreigners saved from death by the brave Government rescuers? Can anyone doubt the loyalty of any other foreigner who has come to this country and who must see the higher standard set for humanity in this land of freedom? All that is necessary is to turn your eyes toward Europe and think.

Europe may have her military heroes, but here in the United States we have the heroes of peace and they loom up bigger.

THE ALASKA COAL LEASING BILL

October 14, 1914, a bill passed by Congress was approved by President Wilson for the leasing of Alaskan coal lands. Up to this time, no form of lease contract has been decided upon by the

Interior Department. For some months past a committee has been endeavoring to frame a form of lease which would meet the requirements of the bill and at the same time make possible that operations may be carried on under its provisions. The task of the committee is a hard one because the bill itself is one of those unfortunate enactments, framed by those having no knowledge of the conditions under which it must be operated. The fact that so many months have elapsed since the passage of the bill without having the same put in effect by offering to the public a form of contract for its acceptance or rejection, is one of the strong arguments against the Federal leasing of Western mineral lands.

There is no question that the Interior Department is honestly striving to make the Alaskan coal leasing bill effective, but the good intentions of the Department do not seem to operate, as applied to the practical conditions which must be met. Unless this lease is perfected at an early day, and unless those who anticipate working under these leases are enabled to begin preparations at once for the next season, the final operation of the bill will be postponed still another season.

THE EIGHTEENTH ANNUAL CONVENTION OF THE AMERICAN MINING CONGRESS

The Eighteenth Annual Convention of the American Mining Congress will be held at San Francisco, California, September 20, 21 and 22, 1915, immediately following the convention of the American Institute of Mining Engineers, and preceding the annual meeting of the American Mine Safety Association. September 23 and 24 have been set aside by the affair management as special mining days, and it is anticipated that a very large gathering of mining men will assemble in San Francisco at that time. The secretary will welcome suggestions as to such subjects as can be discussed with greatest advantage to the mining industry.

AS TO PRICE CUTTING

If current reports of the extent of price-cutting in the coal trade are true, heavy losses are resulting, which can be of only passing benefit to any one. The folly of price-cutting has been demonstrated so repeatedly in all lines of endeavor, that it is hard to understand how the error is continued. When prices are cut below production costs, the elimination of the smaller interests begins. If carried far enough, monopoly will be the inevitable result.

The public has no objection to paying a fair margin of profit. Any benefits derived from a price war are understood by all to be dangerous. Experience has taught that following price conflicts the public pays the old price, plus the cost of the campaign.

There may be examples in other industries which the coal trade could study with profit. The lumber men have made remarkable progress along conservation lines by limiting these senseless struggles within the industry. While the Yellow Pine Manufacturers' Association's activities brought it into disfavor with the Missouri courts, the reforming of the association on a new basis doubtless will result in continued work for the unselfish guarding of the best interests of the lumber manufacturers.

Perhaps no other organization in the country has been as successful in preventing destructive price cutting as the Southern Cypress Manufacturers' Association. This organization has acted on the principle that it is far better to sell less cypress at a fair profit than to keep up mill output figures at a loss.

The argument that large overhead expenses force continued operation is a powerful one, but if this obstacle is met in other industries, why cannot it be met in the coal trade? Much good is certain to follow a painstaking analysis of the work in this direction in other industries. Closer relations between mutual benefit associations would prevent vast duplications of effort.

The United States produces 40 per cent. of the world's coal. About 5 per cent. of the output is exported.

EMPLOYEES AS OPERATORS

The proposed purchase of the Bache-Denman Coal properties in Arkansas by the United Mine Workers of America has not been consummated. There is said to be little likelihood of the deal ever being made, one of the stated reasons being that there would be involved much litigation almost certain to be dragged out over many months and probably years.

Whether or not the purchase by the miners of the property ever comes to pass, the fact that the matter received consideration is sufficient to bring to mind the thought that it might be far better for unionized mine labor to spend money in this way instead of in strikes. Every day lost in a strike means just so much money. This money and that paid as strike benefits would go a long ways in mine purchases. The miners could then come to be employers as well as employees. As owners they would have an opportunity of understanding better, more clearly and more fully that the operator, no less than the operative, has his problems. The ownership by union labor of mining properties would serve to give it a new viewpoint and a better perspective—always valuable and a thing to be desired. Such a different viewpoint and a perspective from a changed angle could scarcely do other than aid toward bringing about a better understanding as to the real conditions which must be met and dealt with by coal mine owners and operators.

COAL VERSUS GOLD

The earth's gold production for one year it is said would scarcely pay for half the anthracite mined in one modest sized district in Pennsylvania.

Pennsylvania coal mines pay wages to nine men for every one employed in gold and silver mining.

To buy all the gold and silver in this country would take \$1.50 apiece for every man, woman and child in the United States. It would take twice that amount from everybody in the country to merely pay for the coal mined in Pennsylvania during 1914.

EXPORTS OF STEEL AND IRON INCREASE DECIDEDLY

FORWARDING OF BRASS GOODS DOUBLE IN VALUE—SPELTER MAKES BIG JUMP.

Exports for January were 30 per cent. greater than those of the corresponding month of last year. This trade expansion extended many articles. Among the important exceptions were copper manufactures and refined mineral oils.

For the first time in many months iron and steel increased. A gain of \$1,500,000 is shown over January of 1914. Exports of brass goods doubled in value. Forwardings of chemicals showed an increase of 50 per cent. The most remarkable comparison is that of commercial automobiles, which increased from \$100,000 to \$2,500,000. Spelter increased from less than \$30,000 to \$2,000,000.

Iron and steel manufactures amounted to over \$18,000,000 in January of this year. Zinc totaled \$2,000,000. Brass and the manufactures thereof were exported to the extent of \$1,300,000. Electrical machinery forwardings totaled \$1,800,000.

COPPER EXPORTS SHOW IMPROVEMENT RECENTLY

Copper exports, for the six months ending January 31, 1915, are considerably under the figures for the corresponding six months of the year previous. While the figures are not available for February and March, it is known that there has been a very decided improvement during the last two months.

The relative amounts of copper exported for the six months ending January 31, 1914-15, respectively, are as follows:

Six months ended —	Ore, matte, and regulus.		Pigs, ingots, bars, plates, rods, scrap, and old.	
	Tons		Pounds	
Jan. 31, 1914	41,807	\$1,803,397	469,492,649	\$71,964,054
Jan. 31, 1915	2,541	39,650	313,336,364	39,765,111

U. S. PETROLEUM PRODUCTION

The increase in petroleum production which has been constant in the United States during the last eight years was more than maintained during 1914. The output exceeded by thirteen per cent that for the preceding year. The high prices which prevailed in 1913 and the early part of 1914 doubtless had much to do with stimulating production. The largest increase in yield was made by Oklahoma.

The following table prepared by the U. S. Geological Survey gives an estimate of the production in 1914 and the actual production for 1913 in barrels:

State	1914	1913
California	103,000,000	97,788,525
Oklahoma	98,000,000	63,579,384
Illinois	21,000,000	23,893,899
Texas	20,000,000	15,009,478
Louisiana	15,000,000	12,498,828
West Virginia	11,000,000	11,567,299
Ohio	7,500,000	8,781,468
Pennsylvania	7,000,000	7,963,282
Wyoming	4,600,000	2,406,522
Kansas	2,700,000	2,375,029
Indiana	700,000	956,095
New York	800,000	902,211
Kentucky	500,000	524,568
Colorado	150,000	188,799
Other States	50,000	10,843
Total	292,000,000	248,446,230

Over-production and a temporary decrease in exports following the beginning of the war in Europe were reflected in lower prices and, for a time, a curtailment of operations generally. The close of the year saw a firmer tendency and a slight increase in field activity.

West Virginia's production of coke for 1914 decreased approximately 1,000,000 net tons. About forty new ovens were constructed during the year and about 300 were abandoned. The total coke production of the State for the year was about 81,600,000 tons.

The present development of the West Virginia coal mines, in the opinion of Earl A. Henry, Chief of the State Department of Mines, is sufficient for an annual production of 100,000,000 gross tons. About seventy-five mines are in an early stage of development.

DECREE IN MIDWEST OIL CASE REVERSED BY SUPREME COURT

Long-Expected Decision Handed Down with Two Justices Dissenting from Ruling— Evidence Reviewed

In reversing the decree in the case of the United States versus the Midwest Oil Company et al., the Supreme Court of the United States handed down a decision that has been awaited with keen interest for many months. The opinion of the court was delivered by Justice Lamar, Justices McKenna and Van Devanter dissenting. Justice McReynolds took no part in the decision of the case.

A portion of the decision reads as follows:

All public lands containing petroleum or other mineral oils and chiefly valuable therefore, have been declared by Congress to be "free and open to occupation, exploration and purchase by citizens of the United States . . . under regulations prescribed by law." Act of February 11, 1897, 29 Stat. 526; R. S. 2319, 2329.

As these regulations permitted exploration and location without the payment of any sum, and as title could be obtained for a merely nominal amount, many persons availed themselves of the provisions of the statute. Large areas in California were explored; and petroleum having been found, locations were made, not only by the discoverer but by others on adjoining land. And, as the flow through the well on one lot might exhaust the oil under the adjacent land, the interest of each operator was to extract the oil as soon as possible so as to share what would otherwise be taken by the owners of nearby wells.

ASKS WITHDRAWAL

The result was that oil was so rapidly extracted that on Sept. 17, 1909, the Director of the Geological Survey made a report to the Secretary of the Interior which, with enclosures, called attention to the fact that, while there was a limited supply of coal on the Pacific coast and the value of oil as a fuel had been fully demonstrated, yet at the rate at which oil lands in California were being patented by private parties it would "be impossible for the people of the United States to continue ownership of oil lands for more than a few months. After that the Government will be obliged to repurchase the very oil that it has practically given away."

"In view of the increasing use of fuel by the American navy there would appear to be an immediate necessity for assuring the conservation of a proper supply of petroleum for the Government's own use. . . ." and "pending the enactment of adequate legislation on this subject, the filing of claims to oil lands in the State of California should be suspended."

This recommendation was approved by the Secretary of the Interior. Shortly afterwards he brought the matter to the attention of the President who, on September 27, 1909, issued the following Proclamation:

"In aid of proposed legislation affecting the use and disposition of the petroleum deposits on the public domain, all public lands in the accompanying lists are hereby temporarily withdrawn from all forms of location, settlement, selection, filing, entry, or disposal under the mineral or nonmineral public-land laws. All locations or claims existing and valid on this date may proceed to entry in the usual manner after filing, investigation and examination."

The list attached described an area aggregating 3,041,000 acres in California and Wyoming—though, of course, the order only applied to the public lands therein, the acreage of which is not shown.

VIOLATE ORDER

On March 27, 1910, six months after the publication of the Proclamation, William T. Henshaw and others entered upon a quarter section of this public land in Wyoming so withdrawn. They made explorations, bored a well, discovered oil and thereafter assigned their interest to the Appellees, who took possession and extracted large quantities of oil. On May 4, 1910, they filed a location certificate.

As the explorations by the original claimants, and the subsequent operation of the well, were both long after the date of the President's Proclamation, the Government filed, in the District Court of the United States for the District of Wyoming, a bill in equity against the Midwest Oil Company and the other appellees, seeking to recover the land and to obtain an accounting for 50,000 barrels of oil alleged to have been illegally extracted. The court sustained the defendant's demurrer and dismissed the bill. Thereupon the Government took the case to the Circuit Court of Appeals of the Eighth Circuit which rendered no decision but certified certain ques-

tions to this court, where an order was subsequently passed directing the entire record to be sent up for consideration.

The case has twice been fully argued. Both parties, as well as other persons interested in oil lands similarly affected, have submitted lengthy and elaborate briefs on the single and controlling question as to the validity of the withdrawal order. On the part of the Government it is urged that the President, as Commander-in-Chief of the army and navy, had power to make the order for the purpose of retaining and preserving a source of supply of fuel for the navy, instead of allowing the oil land to be taken up for a nominal sum, the Government being then obliged to purchase at a great cost what it had previously owned. It is argued that the President, charged with the care of the public domain, could, by virtue of the executive power vested in him by the Constitution (Art. 2, Sec. 1), and also in conformity with the tacit consent of Congress, withdraw, in the public interest, any public land from entry or location by private parties.

TAKE EXCEPTION

The appellees, on the other hand, insist that there is no dispensing power in the Executive and that he could not suspend a statute or withdraw from entry or location any land which Congress had affirmatively declared should be free and open to acquisition by citizens of the United States. They further insist that the withdrawal order is absolutely void since it appears on its face to be a mere attempt to suspend a statute—supposed to be unwise—in order to allow Congress to pass another more in accordance with what the Executive thought to be in the public interest.

1. We need not consider whether, as an original question, the President could have withdrawn from private acquisition what Congress had made free and open to occupation and purchase. The case can be determined on other grounds and in the light of the legal consequences flowing from a long continued practice to make orders like the one here involved. For the President's proclamation of September 27, 1909, is by no means the first instance in which the Executive, by a special order, has withdrawn land which Congress, by general statute, had thrown open to acquisition by citizens. And while it is not known when the first of these orders was made, it is certain that "the practice dates from an early period in the history of the government." *Grisar v. McDowell*, 6 Wall. 381. Scores and hundreds of these orders have been made; and treating them as they must be (*Wolsey v. Chapman*, 101 U. S. 769), as the act of the President, an examination of official publications will show that (excluding those made by virtue of special congressional action, *Donnelly v. United States*, 228 U. S. 255) he has during the past eighty years, without express stat-

utory authority—but under the claim of power so to do—made a multitude of Executive orders which operated to withdraw public land that would otherwise have been open to private acquisition. They affected every kind of land—mineral and nonmineral. The size of the tracts varied from a few square rods to many square miles and the amount withdrawn has aggregated millions of acres. The number of such instances cannot, of course, be accurately given, but the extent of the practice can best be appreciated by a consideration of what is believed to be a correct enumeration of such Executive orders mentioned in public documents.

ORDERS ISSUED

They show that prior to the year 1910 there had been issued

99 Executive orders establishing or enlarging Indian Reservations;

109 Executive orders establishing or enlarging military reservations and setting apart land for water, timber, fuel, hay, signal stations, target ranges and rights of way for use in connection with military reservations;

44 Executive orders establishing bird reserves.

In the sense that these lands may have been intended for public use, they were reserved for a public purpose. But they were not reserved in pursuance of law or by virtue of any general or special statutory authority. For, it is to be specially noted that there was no act of Congress providing for bird reserves or for these Indian reservations. There was no law for the establishment of these military reservations or defining their size or location. There was no statute empowering the President to withdraw any of these lands from settlement or to reserve them for any of the purposes indicated.

But when it appeared that the public interest would be served by withdrawing or reserving parts of the public domain, nothing was more natural than to retain what the Government already owned. And in making such orders, which were thus useful to the public, no private interest was injured. For prior to the initiation of some right given by law the citizen had no enforceable interest in the public statute and no private right in land which was the property of the people. The President was in a position to know when the public interest required particular portions of the people's lands to be withdrawn from entry or location; his action inflicted no wrong upon any private citizen, and being subject to disaffirmance by Congress, could occasion no harm to the interest of the public at large. Congress did not repudiate the power claimed or the withdrawal orders made. On the contrary it uniformly and repeatedly acquiesced in the practice and, as shown by these records, there had been, prior to 1910, at least 252 Executive orders making reservations for useful, though non-statutory purposes.

RITTMAN'S DISCOVERIES STAND INVESTIGATION

(Continued from page 118.)

"The second process discovered by Dr. Rittman may prove of much more value to the country than the first, in that it suggests the establishment of an industry in which Germany has heretofore been preeminent—the dye industry, and also promises indirectly a measure of national safety of incalculable import. Among necessary ingredients of high explosives used in modern warfare toluol and benzol are in the first rank. Heretofore these products have mainly been obtained in Germany and England from coal tar, and the explosive manufacturers have had to depend largely on the supply from these sources in the making of explosives. I understand that some toluol and benzol have been obtained from American coal and water-gas tars, but this supply does not begin to satisfy the present demands. The Federal Government now proposes to obtain the toluol and benzol from crude petroleum also.

"I am further informed that these products can be produced from practically any American petroleum and that the supply can be made sufficient not only for the entire American trade but also for other purposes. This process has gone far enough to indicate that the two products can be produced at a reasonable cost. The real comforting thing, however, is that we have the knowledge that this new source of supply is at the command of our people, and that in time of great national stress, if the nation is ever called upon to defend itself, we will be able to manufacture the most efficient and most powerful explosives known in warfare. Were it not for this discovery, it is possible that in such an emergency, we might be compelled to rely largely on the greatly inferior explosives that were used in the time of our Civil War and this would spell national disaster.

IMPORTANT TO U. S.

"Dr. Rittman concludes from his experiments that this process may become more economical than the German method of obtaining these products from coal tar, as this process not only makes toluol and benzol, but also gasoline in considerable quantities. He intimated to me the possibility of the value of the gasoline being an important factor in paying the costs of the process. If this should prove to be true, it may result in eventually giving the United States a supremacy in the dye-stuffs industry that has for some time belonged to Germany, since toluol and benzol are the source of many of these important dye stuffs that are used in the silk, cotton and woolen industries. It would also tend to prevent disturbance of the great industries engaged in the manufacture of silks, cottons and woollens in

such extraordinary times as we are now experiencing, for we would be able to supply them with the necessary dyes."

CRIPPLE CREEK ESTIMATE

Cripple Creek's output for 1915 will approximate \$20,000,000, according to an editorial statement in the *Daily Mining Record*. Observations as to the potentiality of gold also are of interest. The editorial reads as follows:

During its spectacular career Cripple Creek has produced more than \$340,000,000 in gold. This is a huge sum in itself, yet only a bagatelle when compared with the illimitable amount of new wealth that will be made possible for the world by this same yellow metal. The cumulative total will run into the billions of dollars.

Gold is a tireless worker, with seemingly magic potentialities. It reproduces its own value many times over and never loses its constructive power. It erects an office building here, a factory there; it cultivates farms, builds railroads and accelerates the development of virgin territory. In fact, all material progress is largely dependant upon gold.

When a fresh asset is added to a community, either in the form of a residence, a public structure or a new commercial enterprise through the agency of gold, the money thus used serves its purpose, then flows forth with unabated power into other channels to continue its missionary work in the creating of wealth. This it does, not for a decade, but for centuries; its life is almost without limit.

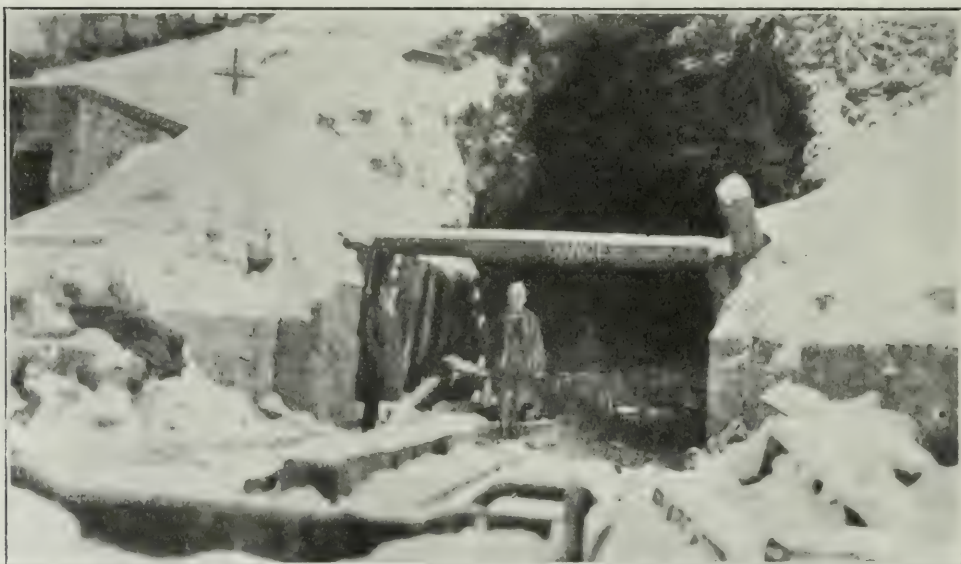
To know how many billions of dollars in new wealth have been made possible by Cripple Creek gold would be superlatively interesting. If statisticians could arrive at the figures with any degree of accuracy the result shown undoubtedly would stagger belief.

Mining men predict that the Cripple Creek output this year will have a value of about \$20,000,000. This sum will benefit the present race of men, as well as generations yet unborn. It will sustain the governments of the future and be a dominating factor in the progress of humanity. Seldom is so much power centered in one spot as is sequestered among the mines of Cripple Creek.

The unwatering of the lower levels of the mines by the Roosevelt drainage tunnel has shown convincing indications that the ore bodies persist to great depth; and any worker following a vein is almost certain to find remunerative values. There now are about one hundred mines operating in the Cripple Creek district and fully half of these are on a paying basis. There are splendid reasons for supposing that the district will more than repeat its production up to the present time. Colorado, with such a great gold camp within its confines, can well claim to be a world power in the realm of finance, besides being a potent arbiter in the affairs of nations.



ONE OF THE SURVIVORS
Shows type of men saved



EFFECT OF EXPLOSION AT RETURN AIR ENTRY

RESCUE SYSTEM SAVES LIVES AT LEYLAND

(Continued from page 127.)

no others were alive in the mine. The oxygen rescue crews, however, continued their work, and finally made their way to the place where the other forty-two men were found alive. Despite their four days' confinement, the men were in very fair condition and only two had to be carried from the mine.

HELMET DISCARDED.

Previously the Bureau's men have been able to rescue one, two, three or four men from mines, but never before has such a large number been rescued. The helmet device has been discarded altogether for the nose clip which is attached to the oxygen tanks. The Bureau's men always have to work against great disadvantages. They have no police powers and they work under sufferance of the operators.

Quite frequently delicate situations develop. There is considerable prejudice against what are termed "amateur" miners and "new-fangled" procedures. It is a common practice, at a time of accident, for the foolhardy to rush in, regardless of the gases which are certain to be produced by the explosion. The experience at Hanna, Wyo., nine years ago was one of the most striking examples of this danger. Sixteen of the would-be rescuers at that time lost their lives.

STUDY BLUE PRINTS

During the excitement, following an explosion, it may seem cold-blooded to the uninstructed for those charged with rescue to sit down and begin pouring over blue prints. It is hard for many to understand the necessity of being familiar with the underground city which must be explored in the dark.

In no other case in the history of modern rescue work has the effectiveness of this system been displayed so clearly. If normal conditions had not been restored in this mine, it is certain none would have been rescued.

LIKE THE JOURNAL

READERS TELL OF THEIR IMPRESSIONS OF NEW PUBLICATION

Numerous communications have reached the office of the secretary of the American Mining Congress commenting on the JOURNAL. Extracts from some of these letters are as follows:

DENVER, March 8, 1915.

DEAR MR. CALLBREATH:

THE MINING CONGRESS JOURNAL for February has come to hand and is certainly a most interesting and readable publication. Your long experience in this class of work certainly shows to great advantage in this publication. I wish it continued success.

D. W. BRUNTON.

PITTSBURGH, March 10, 1915.

DEAR MR. CALLBREATH:

After a hasty examination, I take the opportunity to congratulate you on the interesting features of the MINING CONGRESS JOURNAL, which I am sure will be appreciated.

I am especially impressed with your department on pending State legislation. While a magazine such as yours must of necessity carry general articles, commonly known as feature stories, for the purpose of interesting your subscribers generally, at the same time local interest is intensified when you can present items of special local interest such as your pending State legislation. It might be well in this connection to give a summary of court decisions as affecting mining. Departments such as yours have a tendency to hold interest continuously.

J. J. NORDMAN.

[EDITOR'S NOTE.—A department dealing with court decisions has been incorporated in this issue of the JOURNAL.]

WEBB CITY, February 2, 1915.

DEAR MR. CALLBREATH:

Vol. 1, No. 1, of the MINING CONGRESS JOURNAL, was received in this morning's mail and I take this opportunity to compliment you on your successful effort to give to the members of the American Mining Congress a monthly journal that will keep us posted as to legislation affecting the mining industry and information relative to safety and betterments of mining.

The volume is neat, attractive and readable, and I will look forward with pleasure to its arrival every month.

W. B. SHACKLEFORD.

TERRE HAUTE, IND., February 5, 1915.

DEAR MR. CALLBREATH:

I have received a copy of the MINING CONGRESS JOURNAL and I think this is a step in the right direction. As the membership is so scattered through the different parts of the coun-

try, I think it important that a publication of some kind be kept up, which would enable us to reach more people, and in this way make them more familiar with the wants of all kinds of mining, as it is along the lines of education in that direction. The publication should be encouraged and I feel that you are to be congratulated on the start made in that direction.

J. C. KOLSEM.

TALK OF THE DAY

The first issue of THE MINING CONGRESS JOURNAL, recently started by the American Mining Congress, has just been issued. Its purpose, as announced by the Congress, will be to keep its members better informed concerning legislative matters, both at the national capital and in the various State Legislatures, to carry information concerning important legal decisions and administrative rulings of interest to the mining industry; to carry discussion of the economics of mining and to demonstrate the real relation which exists between mining, agriculture, manufacturing, transportation, and commerce. Its pages will be devoted to the economic, administrative, and commercial rather than to the technical phases of the mining business.

*Subscription price is \$2 a year. Orders may be sent to the American Mining Congress, Munsey Bldg., Washington, D. C.—*Engineering and Mining Journal*.

WHAT COOPERATION IS

It is fine, under ordinary circumstances, for theoretical men to talk about the beauties and advantages of cooperation. At least it does no harm. But in good times, this talk does not appeal strongly to a man who is making money out of his business. He knows that by cooperation he is only continuing the solvency of a competitor whom he would just as soon see fail.

When an entire industry is facing insolvency and when cooperation is the only means of salvation, every one takes a new and different interest in the subject. As near as we can gather, the coal trade is facing the latter and not the former situation.—*Black Diamond*.

THE ENGLISH SITUATION

The coal operators in west Yorkshire have had to face, in common with other operators, a decrease in the receipts of props of 30 per cent. and an increase in their price of about 45 per cent. And concurrently they have to meet a threatened strike of the coal miners who thought the great world war would give them an unequaled opportunity to increase their minimum wage. The operators gave way "with the object of avoiding the disastrous consequences of a coal strike in a national crisis" and conceded the contentions of the workmen's representatives as they specifically stated in their reply "during the continuance of the war between this country and Germany."

Increasing wages when work is not steady is a trying task, for the fixed charges, the pumping, the maintenance of the workings, and the banking of fires all bear heavily on the operator. The price of exported coal has gone up 3 per cent., or 10c. per ton, since the war started, but the west Yorkshire operator will have to look for a further rise, if, during the war, he is to participate in "dividends as usual."—*Coal Age*.

TOO MANY MINES

It is a fine thing for America to have a supply of coal that will last 100 or 500 or 1,000 years. Still, it cannot put every acre of that under development at one time and avoid waste and ruin.

If we want a reserve, we must keep a reserve. Carl Scholz told Governor Dunne of Illinois how to get it. He advised preventing the opening of new mines until they are needed. That is, you cannot reserve coal and work it at the same time any more than you can eat cake and keep it.—*Black Diamond*.

OUTLOOK GOOD

When April comes in there will be business enough for all, especially in view of the evidence given as to better control of the situation now prevailing. May almost invariably takes care of itself in good style and when June comes along

there should be quite an improvement in the general business situation and that should have a good effect on the hard coal trade, as well as on all other lines in which confidence plays a part in stimulating advance buying. Looking backward, it must be agreed that the year since April 1, 1914, has shown a very fair tonnage result, all things considered, and only a small proportion of the total has been sold at less than circular. Therefore, it is with some satisfaction that the dominant factors in one company and another look at the results of the past and survey the prospects of the future. It is well that such a period of consideration should intervene and that there should be no plunging ahead under the unfortunate impulse of a short spell of adverse conditions such as recently prevailed. In brief those who have played their part in studying the situation and deciding what is the best course for their own companies to pursue are to be applauded by all those intelligent persons who take a broad view of business affairs.—*Coal Trade Journal*.

REDUCING ULTIMATE COSTS

One writer states that if the sulphuric acid and the carbon which go off in smoke under ordinary conditions in burning coal were "recovered" there could be certain elements gathered therefrom which would be worth to this country the sum of \$150,000,000 a year. This, of course, is erroneous, but if every ton of coal which is mined and sold in the United States in the course of a year were paid for in cash and promptly the price to the consumer would be considerably less per ton than is now the case. We fancy that this is a much more valuable and practical statement than is the matter referred to above.—*Coal Trade Journal*.

EXHIBIT AT SAN FRANCISCO

One of the best acts of the State legislature was the passing of the appropriation for a mining exhibit at the Panama-Pacific Exposition. It will greatly aid in spreading the education of our mineral resources and will interest many in the great possibilities of this vicinity.

The principal thing to do now is to select a competent man to take charge of the assembling and display of such an exhibit. If the work is not done in an efficient manner much of the money will be wasted. It should be done by one who understands mining of Oregon and knows how to assemble and display exhibits that will attract the attention of people who might be induced to invest in this State.

Such a man is Fred R. Mellis of Baker. He should be selected.—*Baker Oregon Herald*.

In the year 1914 the United States exported to all countries copper ingots, pigs, bars, plates and rods to the value of \$116,026,290; \$20,641,731 of this amount went to France, \$25,191,292 to Germany, \$26,723,081 to Great Britain, and \$17,650,824 to the Netherlands.

CITIES USE ANTHRACITE

New York city, which is the largest user of coal in the world, burns over 10,000,000 tons of anthracite a year. This is equivalent to about two tons of anthracite for every man, woman and child in the metropolis. Over 10 per cent of the anthracite produced is burned at the mines in connection with the work of mining and preparing the coal. Of the remainder, which is shipped, slightly more than two-thirds is sold in New York, Pennsylvania and New Jersey. The presence in these states of the cities of New York, Philadelphia, Pittsburgh, Buffalo, Newark, Jersey City, Rochester, Syracuse, Scranton, Paterson and Albany, with an aggregate population of 8,600,000, accounts in large degree for the large output sold in these states, anthracite being the mine fuel most used in large cities.

The New England states, which include a considerable number of important cities, of which Boston is the largest, receive 14.1 per cent of the output. The Western states take 11.2 per cent, Canada takes a little more than the Southern states, the percentages being 3.6 and 3.4, respectively. Imports, exclusive of Canada, amount to 1-10th of 1 per cent.

PRESIDENT BELIEVES OHIO COAL STRIKE WILL BE SETTLED

(Continued from page 131.)

FULL REPORT ON STRIKE SITUATION FORTHCOMING

As a complete report on the Eastern Ohio strike situation is to be forthcoming shortly the Secretary of Labor would not comment on the situation when interviewed by the MINING CONGRESS JOURNAL representative the latter part of the month. He stated that the report would go to the President for revision before being made public.

The commissioners of conciliation made their report to the Department of Labor. A synopsis of this report was made public. In regard to the conference with the operators and Commissioner Hywel Davies, the report says:

COOPERATION WELCOMED

"Mr. Davies proceeded to Cleveland to ascertain to what extent, if any, the coal operators were willing to cooperate with the Federal conciliators to enable them thoroughly to investigate the causes leading up to the strike, as well as its continuation. Mr. Davies was received very cordially by President Woodford of the Eastern Ohio Coal Operators' Association. He met a number of the Eastern Ohio coal operators, who heartily agreed with Mr. Woodford in welcoming the Federal conciliators in their investigation. Assurance was given that every facility would be rendered the conciliators to get at the bottom of the whole situation and the hope was expressed that a solution would be found.

"In this part of the report it is not necessary to enter into the details of the arguments presented, because the later records of presentation in the joint conferences of the operators and miners with the Federal conciliators by Mr. Maurer and others clearly defined the operators' position in the controversy.

WHEELING MEETING

"The Federal conciliators met the committee of the Eastern Ohio Coal Operators at Wheeling. There was a general informal talk. The entire Ohio coal controversy, as well as the cause leading up to the strike, was discussed in detail. A number of statements were made orally, including references to marked copies of reports, containing speeches and statements, as well as the proceedings of the joint conferences of the operators and mine workers and of the conventions of the United Mine Workers of Ohio."

COMMISSIONERS SUM UP

In conclusion the commissioners said:

"Your commissioners of conciliation have investigated carefully every phase of the Eastern Ohio coal strike, as well as the causes leading up to it. We have conferred with the representatives of the operators and the United Mine Workers individually, collectively and in joint conferences. We have perused carefully all documents submitted and have examined the records and proceedings of joint conferences between the coal operators and United Mine Workers, as well as the proceedings of several State conventions held by the United Mine Workers of Ohio at Columbus during the years 1914 and 1915, and now beg to submit a few of the most important questions at issue, together with a complete record of our work, including testimony taken at the various conferences, as well as an abstract of such record, which indicates the character of the testimony and discloses the more significant points in dispute.

"The conciliators, of course, realized the necessity of bringing the contending parties into conference for a free discussion of the matters at issue, and this we succeeded in doing, joint conferences and meetings being held at various times during a period of three weeks. Failing to accomplish the desired end through mediation, your commissioners endeavored to bring about an arbitration, but our efforts in this regard were also unsuccessful.

PROPOSE ARBITRATION

"Acting within the mine-run law as construed by the Attorney General of the State of Ohio, the operators insist on a split mining rate of fifty-eight cents per ton for coal passing over the screen and twenty-two cents per ton for screenings, while the miners demand a forty-seven-cent flat rate. The conciliators submitted a tentative plan for arbitrating the questions in dispute, but this was not acceptable to either side, the operators insisting that the method or plan must be one of the questions to be arbitrated. The miners on the other hand refused to recognize or submit the question of method to arbitration, but proposed that the operators start their mines, concede the demands of the mine workers, and select their arbitrators. The operators refused to consider this plan.

REFUSE ARBITRATION

"The conferences were continued, however, and at one time it seemed probable that the efforts of the conciliators to bring about an arbitration of the difficulty might be successful. On the occasion of the last conference, however, when the operators came prepared to submit the names of their representatives on an arbitration board and a method for selecting the final arbiters, the miners refused to submit names or to agree to arbitration ex-

cept along the lines originally suggested by them. Finally the operators proposed that the President of the United States be requested to select umpires but the miners also refused to accept this plan.

"After a careful consideration of the situation, your conciliators came to the conclusion that nothing further could be done at this time, but they are of the belief that their efforts may eventually be the means of bringing about a settlement of the controversy."

FERRIS BILL FAILS

MEASURE DESIGNED TO STIMULATE OIL PROSPECTING DIES.

Despite the efforts made to pass the Ferris bill, authorizing exploration for and disposition of coal, phosphate, oil, gas, petroleum or sodium, the measure did not reach the President for signature. It passed the House September 23, and the Senate March 2. The conferees disagreed and the bill died. The provisions of the bill are:

Upon relinquishment to the United States within six months from the date of the bill by applicants for patents to oil and gas lands, included in an order of withdrawal, upon which oil or gas had been discovered, was being produced, or upon which drilling operations were in progress on January 1, 1914, and to which claim was initiated prior to July 3, 1910, the Secretary of the Interior might lease such lands in tracts of not more than 2,560 acres in any area fifty miles square. Leases would run for twenty years with a preferential right of renewal for ten years in favor of original lessor, and would be upon a basis of a royalty of one-eighth of the oil or gas produced. Renewals of leases could not stipulate more than the maximum royalty of original lease. Applicants for patents who have located under the placer mining laws upon lands containing oil or gas prior to the withdrawal of such lands from entry, and who have continued as bona fide occupants of their claims since July 3, 1910, would be allowed to perfect their claims under the bill.

The bill will be reintroduced immediately on the convening of the 64th Congress.

CONTRAIDCTS GILLETT

CANADIAN PAPER TELLS WHAT BUREAU HAS DONE FOR OTHER COUNTRIES

The United States Bureau of Mines has recently been the object of a vicious attack. Representative Gillett, of Massachusetts, declared that the bureau has done nothing for the conservation of economical utilization of petroleum, and that its efforts have been wholly confined to the dissemination of information collected by others. The vehement Representative is totally in error, says *Mine Quarry and Derrick*. The bureau has not only done remarkably fine work in the United States, but it has also, by means of its publications, based on data gathered and prepared by its officials, been of great assistance to operators in other countries. Mr. Gillett knows not whereof he speaks, the Canadian editor concludes.

TABLE MOUNTAIN'S TUNNEL

Famous Table Mountain, the locale of Bret Harte's Truthful James, is soon to give up treasures held back thus far because of underground water, which is now to be diverted by a \$500,000 tunnel, expected to be completed February 1. The water, which has destroyed the workings of thousands of miners, is to be diverted into the Stanislaus River. The tunnel is a mile long and fifteen feet through and was begun about ten years ago. It is estimated that the venture will yield \$200,000,000.

The output of lead practically equaled that of 1913, which was 16,144,772 pounds. The Bisbee district of Cochise County, especially the Copper Queen and Shattuck, contributed most of this metal. In Mohave County, the Tennessee mine was a large producer.

The production of zinc ore showed little change from the yield of 1913, when 14,726 tons of concentrates and crude ore produced 9,428,067 pounds of spelter.

The largest dividend payers were the Old Dominion, Calumet & Arizona, Ray, United Verde, Superior & Pittsburgh, Miami, Shattuck and Tom Reed.

MINERAL RESOURCES FORCE AMERICAN PROGRESS INTO GIANT STRIDES

Head of Geological Survey Tells Notable Gathering of Engineers How War Is Affecting Mining Industry in the United States

Before a representative gathering of members of the American Institute of Mining Engineers, George Otis Smith, director of the Geological Survey, delivered an address on "The War's Opportunities to Make America Mineralogically Independent."

Some of Mr. Smith's points were:

America's marvelous growth during the last few decades is in largest measure due to its mineral wealth.

Did you ever figure the percentage of railroad tonnage that originates at the mine?

In coal, petroleum, copper, zinc, iron, lead and phosphate the United States is a world leader.

The largest reserves of many important minerals are in the United States.

No other country can compare to the United States in the degree of industrial independence afforded by mineral resources.

We lack few minerals.

We are wholly dependent on other countries for only four principal items—tin, nickel, potash and nitrate.

There is a deficiency in our supply of manganese, platinum, gems and asbestos.

We should manufacture our nitrates from atmospheric nitrogen.

Hydro-electric development awaits only legislation.

Potash from the Scarles Lake deposits cannot be handled commercially until further problems are solved by the chemical engineer.

Recent discoveries of platinum-bearing gold ore in Nevada are of greatest importance.

One engineer's work made it possible for the United States to dominate the sulphur market of the world.



DR. GEORGE OTIS SMITH
Director of the United States Geological Survey

This is a good time to drop any ideas we may have of industrial superiority, and to copy for a while the industrial spirit of Germany.

Extracts from Dr. Smith's address are as follows:

For more than half a year we have watched the adjustments and readjustments of American industries to meet new conditions. Six months ago I attempted to suggest the extent to which our mineral reserves could be drawn upon to meet the emergency and, indeed, to strengthen the position of the United States as a world power in industry and commerce. Today, as a nation, we face an even greater crisis in our commercial relations, so that a discussion of national independence is especially opportune.

As a nation we began with a declaration of independence leading to an experiment in statecraft—popular government on a large scale in a string of colonial settlements connected only in a crude way by post roads and coast-wise sailing vessels, and perhaps even more feebly united by bonds of common race or creed. Yet that political independence was the breath of life in the new nation and the ideal then set up attracted the best human material from all lands. Thus we may say was developed America's greatest resource, a progressive citizenry.

MATERIAL RESOURCES

The other element necessary to make America great is material resources—the earth and the fullness thereof. I do not discount the wealth of our forests, which have contributed so largely to our foreign and domestic trade since colonial days, nor do I disregard the bounty of our soil, which enables us in these days of waste and war to feed the peoples of Europe as well as ourselves, yet I believe the mineral wealth of the United States is in largest measure the foundation of the marvelous growth of the last few decades. Industrial America! think to what a degree the industries of America are based upon our ores and mineral fuels, or figure if you will the percentage of railroad tonnage that originates at the mine.

Not only is our country a world leader in the output of such essential minerals as coal, petroleum, copper, zinc, iron, lead, phosphate—and in three of these it exceeds all other countries put together—but as far as such things can be measured or estimated we are blest in the possession of the largest reserves of many of the more important of these minerals. No other country can in any sense compare with the United States in the degree of industrial independence afforded by the possession of these mineral resources. The raw material is at hand to enable us to win and maintain supremacy as a manufacturing nation.

NOT WHOLLY INDEPENDENT

Yet under this "most favored nation clause," the catalogue of our mineral resources is not the complete list of minerals essential to modern civilization; a few items are missing, others are present apparently only in insufficient quantities, and the quality or locality of the deposits of still other minerals may be unfavorable to present-day utilization. Thus it happens that the nation is not wholly independent in its mineral industry and no problem better deserves the attention of the American mining engineers than this: How can we fill these gaps and thus make America more truly independent?

The catalogue of the products of our mines, quarries and wells is long. The list of what we lack is short. We are wholly dependent

on other countries for only four principal items—tin and nickel, potash and nitrate. Among the minerals of which the United States has a deficient supply are manganese, platinum, gems and asbestos. Still other minerals it has heretofore been more profitable to buy abroad than to produce at home, such as chrome ore, barytes, flint pebbles, magnesite, mica and graphite.

THE TIN SITUATION

These deficiencies create problems relating to three different types or classes of minerals. In the first class, tin and nickel only seem to present a hopeless outlook; and, as a matter of fact, the whole world is poor in tin. Especially is this scarcity felt in certain of the countries now at war, where the shortage due to cessation of imports is intensified by the increased use of tin in canning army supplies. But we can look to South America for tin ore and make its importation a foundation for profitable commerce with Bolivia. For nitrate we can continue to rely upon Chile, but we should develop our independence in respect to this mineral by the manufacture of nitrates from atmospheric nitrogen. Opportunities for cheap hydro-electric development will invite capital as soon as Congress will legislate. For potash the outlook is less certain; thus far only one potash-rich brine has been found—that of the Searles Lake deposits, in California, where potash occurs in even greater quantity than that at first estimated by the Geological Survey, but the problem of its commercial extraction has not yet been fully solved by the chemical engineer.

The deficiencies of the second class, like manganese and platinum, are stimulating to the geologist and the engineer, the one to discover, the other to develop. The recent find in southern Nevada of rich platinum-bearing gold ore constitutes a notable addition to the world's supply of this too rare metal.

ANOTHER CLASS OF MINERALS

The third class of minerals, those which it has paid better to buy from foreign producers, probably furnishes the largest incentive for the effort to secure mineralogical independence. Here especially can the geologist and engineer cooperate. Magnesite, mica and graphite for example, are common minerals, of which large deposits have been found in this country, yet up to the present time they have been large items of import from Austria, Canada and India.

As an encouraging instance of mineralogical independence, you may recall that only about ten years ago this country imported its sulphur from Sicily, whereas now, by reason of the work of one engineer, the United States leads the world in the mining of sulphur. Cannot further success be expected in the

utilization of mineral resources hitherto practically untouched?

The substitution of certain minerals of domestic origin for those bought in foreign markets will bring us face to face with the problem of standardization. Price is not the last word with the manufacturer-consumer. For some raw materials he may prefer to buy in a market where he can find the same grade month in and month out and year after year. His process, for example, if he is a glass maker or a potter, may be adjusted to a particular grade of manganese or a certain quality of clay. Thus it happens that in clays and magnesite and manganese and medicinal oils the European produce has gained the American market, and the present opportunity for a domestic substitute for some imported minerals will hardly outlast the war unless the American producers enlist the aid of the best engineering and technical skill. This is a good time to drop any ideas we may have of industrial superiority and to copy for a while the industrial spirit of Germany, which systematized processes and standardized products until they won markets in every continent by sheer superiority.

To me, the outlook for successful endeavor by the American engineer seems very bright.

SURVEY'S WORK

Referring to the work of the Survey, Dr. Smith declared, that not only is the investigation of all the business values attached to lands belonging to the nation in a line with business principles, but the determination of what constitutes the highest use of the undeveloped lands is an allied task of even greater importance; indeed, it is nothing less than a national duty.

The detailed examination by the governmental geologist of the Leadville mine in 1879, or of a mine in the Yearington district in 1914, is justified only as the facts of ore occurrences observed and the laws of ore genesis determined are found to have broad application in the winning of mineral wealth. This principle applies throughout the whole field of geologic investigation—property lines and State boundaries must be overlooked by the geologist who is attacking a large problem. Land ownership is only an incident when large questions of natural resources are considered.

A former director of the Geological Survey prophesied for the United States

a future annual output of mineral products having a value of \$1,000,000,000. The present production is two and one-half times that amount. As a result, it is evident that federal scientific investigations of these natural resources are even greater now than in 1880.

UTAH'S MINE SHOWING FOR 1914

According to figures issued by the United States Geological Survey, Utah's mines showed a decrease of about \$6,900,000 in the value of the gold, silver, copper, lead and zinc output in 1914, as compared with the yield of 1913. The estimated value of Utah's metal output for 1914 is \$38,000,000. There was an increase in the quantity of lead produced but decreases in gold, silver, copper and zinc.

A decrease of about 6 per cent in the ore mined was registered, the figures for 1914 being about 9,550,000 tons and those for 1913 10,202,566 tons.

The gold output decreased over 7 per cent from \$3,565,229 in 1913 to \$3,300,000 in 1914, the gold coming in large part from copper ore and partly from lead ore and siliceous ore.

In the production of silver there was a decrease of from 13,084,835 ounces in 1913 to about 11,752,000 ounces in 1914, or more than 10 per cent in quantity and about \$1,500,000 in value. The greater part of the silver was extracted from lead ore.

The copper output decreased about 4 per cent in quantity and about \$4,500,000 in value, 155,901,000 pounds being the production for 1914, as against 161,445,962 pounds in 1913. The reduction was mostly in the smaller mines. The Utah Copper Company increased its output by 4,000,000 pounds.

Lead production was increased from 166,126,790 pounds in 1913 to 181,553,000 in 1914, or over 9 per cent.

Zinc ore and concentrates showed a decided falling off. The total output of recoverable spelter in 1913 was about 14,297,000 pounds. In 1913, all told, 18,857,827 pounds were produced.

HEALTH CONDITIONS AT JOPLIN

Investigators' Findings—Suggestions and Recommendations as to Changes and Regulations

The United States Bureau of Mines has recently issued an abstract of a report of an investigation made of the sanitary conditions in the zinc-lead mines of the Joplin, Mo., district and their relation to pulmonary diseases among the miners. The report is the result of investigation made by A. J. Lanza, passed assistant surgeon, United States Public Health Service, and Edwin Higgins, mining engineer, of the United States Bureau of Mines.

The investigations were made particularly with a view of improving conditions, which have been a matter of grave concern to operators and miners alike, through suggested educational work or state legislation. The report is quite comprehensive, dealing with conditions met with in the mines and among the workers and treating at more or less length various phases of the subject. The following conclusions are arrived at as a result of the investigations by Messrs. Lanza and Higgins:

(1) The death rate from pulmonary diseases is unusually high among the miners of the Joplin district.

(2) While poor housing, exposure, alcoholism, the use of common drinking receptacles and overwork, all tend to lessen the power of the miner to resist disease, the prime factor in causing pulmonary trouble is the rock dust in the mines.

(3) Rock dust in the sheet ground mines, while not great in amount as compared to mines with more restricted working places, is harmful to the miner for two reasons: (a) Because he is exposed to it practically during his entire shift; (b) because the dust is made up chiefly of particles of insoluble flinty sheet with splintered and knife-like edges.

(4) This rock dust is produced by the blowing of dry holes, squibbing, boulder

popping, drilling without water, shoveling, tramming, roof and pillar trimming, and the dumping of the bucket at the surface.

(5) By observing certain precautions rock dust in the mines can be almost completely abated.

(6) There are certain abuses connected with the piece system of work that demand attention and correction as far as practicable.

RECOMMENDATIONS

(1) The following means should be employed for the abatement of rock dust in the mines:

(a) Provide a water supply for every working force, preferably by the laying of separate water lines.

(b) As rapidly as may be without too great cost, equip all miners with some type of drilling machine which provides for water passing through the core of the drill into the drill hole. Results almost as good may be obtained by equipping the present type of dry drill with a water spray (orifice diameter 1/20 inch) directed into the drill hole.

(c) Make and strictly enforce rules against squibbing and boulder popping during the time that the shift is underground; and against the blowing of dry holes at any and all times.

(d) Thoroughly wet the working faces and the broken rock every morning and again at noon if necessary.

(e) Improve ventilation by the sinking of new shafts whenever practicable.

(2) Do away with common drinking cups and kegs, and water pipes which allow the miner to bring his lips in contact with the orifice. Substitute the well known sanitary drinking fountain when practicable, or have miners bring their own water supply in individual containers.

(3) Do not employ, as shovelers, men under twenty years of age.

(4) Through cooperation among the operators, provide a maximum daily tonnage for shovelers, so that they cannot injure their health through overwork.

(5) Provide a warm, dry and clean place in which the miners may change their clothes.

(6) Through intensive educational campaigns in the public schools, and amongst the miners themselves, disseminate information as to the harmful effects of unsanitary practices and conditions, such as crowded living quarters, overwork, exposure, dissipation, the breathing of air polluted by powder fumes and rock dust, the use of common drinking devices, etc.

It is the belief of the investigators that much can be accomplished in safety work and in the protection of the health of the miner through educational work, and by securing the cooperation of the miner. However, it is realized that this is not always without its difficulties.

MINING LEGISLATION URGED

That the present mining statutes are inadequate to meet the needs brought about by the rapid and radical changes of the last few years in mining in that state is the statement of State Mine Inspector Frank I. Pearce, of Indiana, who recommended the passage by the legislature of his state of mining laws designed to reduce the number of fatalities.

Mr. Pearce recommends passage of an act restricting the use of electricity in coal mines to a direct current of a not greater voltage than 250, also rules for the wiring of mines designed to prevent workmen from coming in contact with wires.

Among other recommendations by State Inspector Pearce are those to require mine bosses to visit each working place each day and to see that miners are provided with suitable props and caps, that mine bosses should be held responsible for the safety of each working place and that authority be given them to see that such are made so.

In connection with the dangers from fire damp explosions, which he says are increasing because of mining operations gradually becoming deeper, he recommends the amending of the present mining statute, limiting to two hours the time that shall elapse from the time a fire boss has examined a working place until a person shall enter it to commence work.

The mine boss should be required to see that fans are running a required number of revolutions and that ventilation is proper. Fan houses should be constructed of fireproof material, and not built closer than ten feet to air shafts; explosion doors should be built directly over air shafts; frame tipples, engine and boiler rooms should be equipped with fire fighting apparatus.

Laws to regulate the use of powder and the firing of shots should be enacted, and shot firers should be employed in all dry and dusty mines and in all mines generating fire damp.

Mine cages should not be allowed to travel more than 500 feet a minute, and the cages should be equipped with handholds and sheet iron guards running lengthways of the cage, at least four feet high.

Persons under the influence of intoxicating liquors or having in their possession intoxicants should not be allowed on mine property.

A school of mining engineering, to be established by one of the state schools near the coal fields, is urged. The school should offer such long and short courses in the science and practice of mining as will best serve to train persons for efficient work in the various phases of mining industry, and it should compile and disseminate facts for promoting efficiency. A laboratory for the analyzing of mine air, coal and other minerals is also urged.

The age limit against employment of boys in mines is recommended to be raised from fourteen to eighteen years.

Corundum ore is being mined quite extensively in Mysore, India, about 200 tons of uncleaned corundum being produced annually.

WEST VIRGINIA OFFERS OPPORTUNITIES TO WORKERS

MINERS WHO ARE AMBITIOUS TO OWN
HOMES IN DEMAND, OPERATOR
DECLARES

"No class of workmen in West Virginia has anything on the coal miner as a wage-earner when he wants to work," said a well-known coal man from the New River field. "And furthermore, no class of workmen has the same opportunity of making good without previous training as the men who wield the pick in the coal mine. While it is true that there are many of the shiftless sort, that live from hand to mouth, or, in other words, work as little as they can and spend all they make, at the same time there are a great many who are good citizens—men who are industrious, frugal and thrifty, and are raising and training their children in the best possible way.

"The old idea that a mining town is the last place on earth to live must give away to the fact that the average mining town is now a desirable place to live—a place where, through the cooperation of those who have invested their capital in the operations, the ambitious miner has a chance for education that will mean advancement in his work—where every movement for his uplift, comfort and entertainment has been encouraged and financially assisted—where there are good schools for his children, giving them the same educational advantages as are given in the cities—where the best food and supplies are sold at the lowest consistent prices, and where he has a chance to live in comfort and accumulate his savings.

"A miner's home is what he makes it, and as has been truly said, to a large extent you can judge a man by his efforts to improve his home surroundings and the environments of his community, and there are hundreds in the New River field, as there are thousands in the State, who are striving to this end.

"The return of prosperity to the wonderful coal fields of the State will bring the need of more labor, and West Virginia offers a splendid opportunity to the laborer who is seeking a home and a chance to make good wages."

STARTS NEW MAGAZINE

ANACONDA COMPANY PUBLISHES
MONTHLY TO AID SAFETY PLAN

With its slogan, "Safety-First," the *Anode*, the official publication of the bureau of safety of the Anaconda Copper Mining Company, of Butte, has made its appearance. The paper is edited by A. S. Richardson, the safety engineer in charge of this branch of the Anaconda company's work. The publication is well gotten up and contains some high-class contributions. The following is an extract from the introduction contained in the first issue:

First of all, this magazine is to serve as a means for furthering the "Safety-First" movement at the mines and plants of the company. Undoubtedly every employe is anxious to avoid injury to himself and others, but nevertheless accidents do occur. To a large extent this is due to a lack of knowledge of the dangers caused by certain practices or methods of doing work, and many of such accidents can be prevented. In connection with the "Safety-First" movement this magazine, therefore, will be devoted to the publication of all such information as will help to prevent accidents.

ISSUE NEW CATALOGUE

JEFFREY MANUFACTURING COMPANY PRO-
DUCE NOTEWORTHY WORK

An excellent example of present day cataloguing is seen in the 1915 General Catalogue of the Jeffrey Manufacturing Company, of Colorado.

While the presentation of the varied products carried by the Company offers an intricate problem, yet it has been done in a comprehensive and readily understandable manner. All material carried in stock is emphasized in bold type, the different elevators and conveyors are grouped; standard chains and their substitutes, as well as the Jeffrey Manganese chains, are strikingly presented. An outline of what the engineering department of the company can do, in regard to special equipment, is contained in the catalogue.

PRICE CUTTING IN COAL INDUSTRY RESULTS IN WIDESPREAD HARM

Cooperation to Prevent Destructive Competition is Urged— Interstate Competition Declared to be Unreal— The "Trust" Feature

Price cutting is denounced roundly in an article by George H. Cushing, in the *Black Diamond*, of March 13. The article referred to reads as follows:

The coal trade needs first and most of all some fatherly advice. It needs, next, to put that advice into practice.

The advice which the trade needs is to submerge individualism for a while and to cooperate. In that alone lies the salvation of the trade and of the individual companies.

As a whole, the coal trade has gone stark crazy. It has lost tonnage, which is money. Now, on the little business that remains it is cutting prices; it is throwing away the little profit which remained. That is nothing but lunacy.

In the northwestern territory or the upper lake territory, almost every coal man is beside himself with a desire to get all the business and to drive the other fellow out of it. The large producing companies which own their own docks declare that the smaller companies, which rent space upon docks owned by others, expect them to retire from business. In return, they want to kill the little fellow off. The merchant dock owners are caught in this whirligig and are fighting both to save themselves. These three warring interests are trying to kill each other off. Each faction wants to be the only one left when the fracas is over. All three are fighting with the same weapons—cut prices.

THE REAL CONTENTION

A little sober thinking would teach all three that they are not bent on commercial murder as they think. What each one wants is that he shall not lose any tonnage. He wants to come out of this

depression having sold the same tonnage as last year. If that war is carried to the extreme which is now indicated, the survivor will be the one who has the longest purse or the man who can stand the heaviest loss. The fact that all could lose tonnage and still make money by getting a price is lost sight of.

This northwestern situation is merely an aggravation of the general plight in every coal field. There is not enough business to give each mine in each district the same tonnage it had before. Still each section is trying to save itself from any tonnage loss. To do so it is trying to drive all competing sections and districts out of business.

The result is that one producer is reducing the price to kill off the other fellow; the producer attacked replies in kind. The consumer alone gets the benefit. The war does not change in any sense the relative positions of the warring in the coal trade. It only causes all of them needlessly to lose money.

We will take Illinois and Indiana coal for example. Northern Illinois mines are fighting southern Illinois mines. This intra-state strife is ruinous. Then, too, all Illinois mines are fighting all Indiana mines. This is doubly ruinous. The southern Indiana mines are fighting the northern Indiana mines. That is still worse. Then, jointly, Indiana and Illinois are fighting Ohio, eastern Kentucky, West Virginia and Pennsylvania. In turn, Ohio is fighting West Virginia; West Virginia is fighting Ohio, and those four Eastern States are fighting the West. In every case each is trying to get all of the business for himself and to leave the other fellow none.

At the same time every coal man knows perfectly that price cutting can not possibly drive the other fellow out of the business. It has been tried many times and always has failed. Also, he has, in normal times, enjoyed a certain percentage of the business. He is going to fight to keep that percentage. We might as well realize that fact now. We must all admit it in the end.

FIGHTING A SHADOW

This one thing is true: there is no such thing as general interstate competition in coal. This means that the operators have been fighting something that did not exist. That is a broad statement, but it is true.

For example, West Virginia, Ohio, Pennsylvania and eastern Kentucky each does a certain amount of business in Chicago despite all that Indiana and Illinois have been able to do. There is a reason, and it is not a price reason. Certain Indiana and Illinois mines sell mine run coal in Chicago at \$1.75 to \$1.90 a ton, delivered. The freight rate alone on Ohio coal is \$1.65. This would leave to the Ohio operators, if they really competed on a price basis, only ten cents a ton for their coal.

The freight rate on all western Pennsylvania, some West Virginia, and all of eastern Kentucky coal is \$1.90. If those operators had to compete on a price basis, with the Illinois and Indiana products above referred to, they would get nothing whatever for their coal.

The freight rate, alone, on some Pennsylvania and some West Virginia coals is \$2.05. If they tried to compete on a price basis with the Illinois coals above referred to they would have to give their coal away and then absorb fifteen cents or more of the freight rates.

And yet there is a large sale of all of these coals in the Chicago market. This indicates that they are not sold in price competition as that is generally understood. Rather, these coals fit into peculiar needs of the people. To the extent that they meet a known demand they are above ordinary price competition.

To fight each other on the assumption that this preference of the buyers can be overcome by a change only in the price is therefore the utmost of folly. There is, therefore, and can be no such thing as *general* competition on a price basis in the interstate coal market. We make an exception, of course, of the upper lake region, where conditions are peculiar.

If what is here said is true, a fight will not eliminate any coal from the market. Rather, if Indiana and Illinois cut the price they but lose money without gaining in tonnage. That is, if Illinois and Indiana cut prices they harm themselves without diverting business from eastern coals. If eastern coals cut prices, they lose money without making any headway against the West. All price cutting intensifies the rivalry between the producers of one field without invading the territory of another field. That is now self-evident.

LOSSES OF TONNAGE

Another homely fact to keep in mind is that conditions dictate that all operators must lose some tonnage. For example, February and March last year were fairly cold months. Coal production, therefore, was heavy. February and March this year were warmer than ever known. The consumption of domestic coal is thus cut to about one-half of what is normal. That means a loss of tonnage. There is no escape from it.

Another pertinent fact is that the steam business is away below normal. One of the major industries recently compiled some figures. It was in the latter part of August running to about 65 per cent. of capacity. It fell into the dumps late in September. Early in October and during November it was running to less than 20 per cent. of capacity. At times this whole industry was down to 15 per cent. of capacity.

However, the managers of this industry expected to resume work at almost any time. They continued to buy coal and hence to accumulate a storage pile.

Instead of a quick recovery, this industry "came back" very, very slowly; by the latter part of February it had reached only 40 per cent. of productive

capacity. It had finally to shut off coal shipments because it had room for no more.

Many other businesses are similarly situated. In fact, if the steam plants are running to 40 per cent. or 50 per cent. of capacity they are doing well.

The point lies here: If the domestic trade is consuming coal to only 40, 45 or 50 per cent. of normal, and if the steam trade is well stocked and is consuming coal only to about 40 per cent. of normal, the coal trade must lose tonnage. It is suicide, seeing the facts, for any single mining company to assume that it can continue to produce as much coal as formerly. On the contrary, every coal operator must take his proportion of the tonnage loss. This means that if he has two mines, he must shut one of them down and run the other a little less than full time. If he has but one mine, he need expect to run it no more than half time. To cut prices in a fight over the remnants of business is only to throw away money on the tonnage that is moved. This is a double loss—a loss of tonnage as the result of business and weather conditions, and a loss of revenue as a result of price cutting.

WHERE COOPERATION ENTERS.

Since coal men have lost tonnage, their only hope is to save themselves by getting a fair price on what remains. This demands cooperation. The point is as to how they may cooperate without violating any anti-trust law.

One way, of course, is for the smaller companies to sell out to a large concern or a "trust." The obvious objection to such a program is that it is not feasible. When the coal companies are having difficulty to finance their payrolls is no time to think about any large financing. Also it would be folly to sacrifice a good mine for anything like the price it would bring now.

However, no law prohibits the operators from *unitedly* gathering statistics and from *individually* using those figures.

We suggest here the importance of figures. If an operator guesses correctly what coal any market will absorb, he would probably be able to get \$1.50 for

his lump coal and \$1.10 or \$1.15 for his mine run, or mere living figures. But if he should guess wrong, he would be doing mighty well if he got \$1.00 a ton for his lump coal and seventy-five cents for his mine run, or a heavy loss. Thus the best he can hope to do on a guess is to break even. The only way to avoid a loss—since many guesses must be wrong—is to compile a table of statistics. This table should show the normal absorptive capacity of certain markets and the present capacity. Then it should show from the records of the various companies the total shipments to that section. It would be made clear at once what was the situation of each market as to being overstocked or understocked with coal. Thus the individual operator could re-adjust his affairs.

The operators might also give to their statisticians the price at which each size of coal sold. It would be permissible for the statistician to print and distribute a statement of the average price obtained for each size or grade of coal from each district. Thus the individual operator would know whether he was pulling down or putting up the average price. Naturally, he could regulate his business accordingly. Since operators were selling lower than the average price they would know that they could get a much better price if they but held out for it.

There are tremendous possibilities in this suggestion. There is a possibility that this plan could be applied to whole states and even to a number of competing states. However, that is only an ultimate possibility. The success of the plan, however, does not depend upon its general adoption. On the contrary, it can be worked by single producing districts.

That is, on the theory previously outlined, that there is and can be no *general* and interstate competition on coal *on price alone*, it becomes necessary only to have regulation among those who produce similar kinds of coal. Thus regulation as here suggested can be quite as effective in a district quite as though one organization were to cover the whole United States.

PERSONALS

Guy E. Mitchell, who has charge of the publicity work for the United States Geological Survey, visited some of the western offices of the bureau during March. He attended the meeting of the National Park Association at Berkeley, March 10 to 17. On his trip, Mr. Mitchell visited the offices of the Survey in San Francisco, Denver, Salt Lake, Sacramento and Los Angeles.

H. Foster Bain, of the *Mining and Scientific Press* of San Francisco, expects to be in Washington soon, en route to London, where he will take charge of the editorial end of the *Mining Magazine*. Mr. Bain recently has exchanged places with T. A. Ricard. Mr. Ricard has returned to the *Mining and Scientific Press* and Mr. Bain is taking the place he occupied on the *Mining Magazine*.

Mr. H. A. Granberg, secretary and treasurer of the Hahns Peak Gold Mining and Milling Company, of Routt County, Colorado, is recovering from a serious accident, which, but for Mr. Granberg's good stock of grit might have been far worse in its consequences. While in the mill, of which Mr. Granberg is manager, he was struck by a belt, which had slipped from its pulley with such force as to break the platform, causing him to fall eighteen feet to the cement floor. Mr. Granberg's right leg was broken in two places. Other external injuries were sustained, as well as those of an internal nature. It was thought necessary to amputate the fractured limb and only through the insistence of Mr. Granberg that it should not be done, was it saved. Mr. Granberg is now at his home in Oshkosh, Wis.

We are under obligation to Mr. Hennen Jennings, of Washington, D. C., for the latest edition of "Lindley on Mines." Any work on mining or related subjects will receive editorial attention if sent to the MINING CONGRESS JOURNAL.

Frederick G. Cottrell, Chief Chemist of the Bureau of Mines branch at San

Francisco, was in Washington last month on special business connected with his work.

W. R. Woodford, president of the Ohio Coal Operators' Association, accompanied by George M. Jones, R. L. Wildermuth and John Zelenka, were in Washington last week.

F. M. Murphy, of Prescott, Arizona, was in the capital the early part of March.

Russell F. Collins, of Spokane, Washington, visited Washington the early part of the month on business.

PROSPECTOR TIM

(Written especially for the Spokane Mining Congress by May Arkwright Hutton.)

At his cabin door sat Prospector Tim,
Smoking his stubby stemmed pipe,
At his side, his dog, as shaggy as he,
Old Tige was the lean, wolfish type.

Both hunters, they kept the larder in
game,

Bob, the tom-cat, rustled his own,
While the pet gray squirrel, so nimble
and cute,

Was content with an old pine cone.

Tige and his master came into the hills,
To improve their financial condition;
Bob, a stray bit of flotsam and jetsam,
Little Friskey, a late acquisition.

Tim staked out a claim on the moun-
tain side,

And he named it the Shamrock Queen,
Where he toiled and dreamed of his
sweetheart Nell,

And her hair with its golden sheen.

His cabin of logs he built near the trail,
Just below the mouth of the drift.

To prospectors passing, the latch-string
was out,

Though old Tim was at home or on
shift.

There's an unwritten law 'mongst moun-
tain men,

That the cabin is yours when you call,
If you'll wash the plates and inscribe
your name

On the shake that hangs on the wall.

The orders Tim gave to Tige were
unique
When the time to leave his pets came,
To rustle a job in some shipping mine
For a stake to develop his claim.

"Now, Tige, Oi'll lave yez in charge iv
Friskey,
An' Bob, an' the claim, an' the shack.
Be aisy wid Friskey, me pet, ony way,
An' kape Bob in nights till Oi'm back.

"Don't yez hunt whin the wind blows
snowy and howl,
But go down to the mill-cook, Micky
McCall,
An' he'll give yez grub for Bob and
yoursel,
Friskey cached his supply in the fall.

"An whin the snow has gone from the
valley,
An' yez hear the lark an' the quail,
Come down to meet me wid Friskey an'
Bob,
At the fut iv the windin' trail.

"An' whin we get back to our cabin home,
Oi'll tell yez the things O'iv planned,
Whin we stroike it rich in the Shamrock
Queen,
Tige, ol' pardner, yez understand?

"Oi'll build in the valley a mansion grand,
Fit home for a bonnie lass true,
An' maybe a bit o' a baby playmate,
Tige, fur Friskey, an' Bob, and fur
you.

"Oi'll thry once more, in the morning,
Tige,
To frighten thim Brownies away,
Wid a little fuse an' a powder stick,
Thim blaggards too long hev held
sway."

When the smoke had cleared, and the
candle light flashed
On the gray, somber walls of the drift,
Some bright sparkling gold shone out
through the gloom,
The reward of patience and thrift.

Tim saw the fulfillment of hopes long
deferred,
And put in another big blast,
Its echo rang out o'er the valleys and
hills,
But poor Tim, that shot was his last.

He groped along to the bright light of
day,
Tige's howls soon brought friends to
the spot,
Who did what they could to soothe Tim's
last hours,
But his life paid the toll of a premature
shot.

Tim framed a decree, ere he breathed his
last,
Through an able and learned attorney,
And left the Shamrock Queen to Nellie
Killdea,
His sweetheart in far-off Killarney.

With one hand gently resting on Tige's
shaggy coat,
With Bob softly purring beside,
And shy little Friskey in hiding near-by
Old Tim, the loved prospector, died.

The blast that sent poor old Tim to his
God
Proved the Shamrock Queen a great
mine,
Made Bob a wanderer over the earth,
And left Friskey alone to pine.

They found Tige dead on his master's
grave,
His faithful old heart had broken,
He loved with a love such as few men
know,
Although his love was unspoken.

CHICO REPORTS GOLD STRIKE

Chico, California, reports the discovery of what is believed to be a pocket of gold quartz, valued approximately at \$1,700, on the mountain ranch of E. I. Deneen, near Nimshew. Deneen will prospect further following an assayer's report, provided the report is favorable.

SHOVELING MONEY

BY CHAUNCEY THOMAS

Editor's Note.—Mining needs more brains than farming. Gold mining can ignore its market. Only 5 per cent. of the land in the western half of the United States will ever be tilled. This vast area, as large as all Europe, must base its hope on mining. These are some of the conclusions drawn by Chauncey Thomas in the following article.

Investment is to insure that a dollar brings in a dime, speculation is to risk that a dime brings in a dollar, farming is betting on the weather for another quarter, manufacturing is judging human nature for an extra fifty cents, mining is looking through a rock for another dollar. Mining is a safer business than farming, only it needs more brains. And now here is one thing that I have never seen mentioned in any work on economics, and I have read over a hundred of them, gold mining is the one business in the world in which there is no competition.

More than this, gold mining is the one business in the world that can ignore its market. Raw material and manufactured product are, of course, but relative terms, one man's finished product is another's raw material, and so on down the line from the hand of nature to the ultimate consumption and disappearance of any article you care to name. But the gold miner stands alone between nature and consumer, he alone among men has no thought of the middle man. The world is his market, all mankind is his customer, and they are right at his door. Fashion cannot injure him, new inventions cannot harm him, substitution he fears not.

Any fool can make something, it takes a business man to sell it. Not so with the gold miner. It takes a man to get the gold from the rock, but any fool can sell it; in fact, most of us cannot help

selling it. Men with wheat, iron, coal, wool, cotton, wood, and all the wrought articles of commerce are constantly begging us, tricking us, forcing us to sell our gold. Where in the world is another product like this?

Of the western half of the United States but 3 per cent. of the surface is in use. By this I mean land under the plow, the pavement or the pick, land where the original surface of the ages has been broken for the use of man. The utmost promise of the future for this desert land is that not over 5 per cent. of the surface will ever be broken. This may seem a small percentage, yet it is up to the average of the land surface of the globe now used by man for everything except timber and grazing. All the farm land of the western half of the United States can be put into Iowa and Illinois. All the farm land of Canada, all possible future farm land included, if you please, can be put into three Iowas. If you doubt these little known figures, look up the maps of the United States Land Office. The reason is—water. Just so much falls from the clouds, year in and year out, and we are using most of it in the desert west now. The total amount that falls will not water over 5 per cent. of the western half of the United States sufficiently to insure crops.

Colorado, the Western State with the largest used area today in proportion to its square mileage, has over 94 per cent. of its surface as virgin as when Coronado crossed the southeast corner of the State nearly a century before the Mayflower was built. Other Western States have still less of their area in proportion in use, or ever can have.

The one answer to this is—mining. In this desert square, fifteen hundreds on a side, as large as all Europe, Cripple Creeks, Leadvilles, Comstocks, and Rands will be found at intervals for centuries. Today Colorado alone has over

fifty mountain peaks, each over two miles high, yet unnamed. The West has not yet been scratched. Who today knows what mineral ledges rust unseen in that parched, canyon-ripped wedge extending from Los Angeles nearly to the Gulf of Mexico, and north to Canada? Here and there a metallic dot on the map, a Cripple Creek, a Leadville, a Gilpin, a Comstock, then hundreds of miles with—nothing. Nothing except gold in almost every stream, tracks in the sands leading to the caves in the hills where hides the gold.

If you gamble in mining you lose. If you gamble in wheat you lose. Gamble in anything and you lose. But be content with the same profits in mining that you get in farming, and mining is a safer business than farming. Financial insanity in mining will yield no larger profits than in any other business conducted by a lunatic. The man going into mining looking for 1,000 per cent. will probably get nothing, but the man going into mining looking for 10 per cent. will probably get 100.

The curse of mining is its profits. Consider your mine a mill and you will make money, more money than in any mill, but if you consider it a Monte Carlo, then you will lose, and you deserve to lose. A fool has no business with money.

The mine, the farm, the city and the road are the four things that make civilization possible. The only way we give value to anything is to change its shape and its position. Coal, iron, copper, wheat, cotton, meat, even gold, all are worthless by themselves, only in their combination is life. The farm billowing under the ripening sun, the steer knee-deep in clover, the city with its humming wheels, the interlacing roads, all are useless, all even impossible, without mining. And mining is impossible without these. No one industry is more important than another, none less important, each is a link in the chain, a stone in the arch; they must prosper together or not at all, and no one, or more, among them can prosper more than the least among these four basic elements of human life, the city and the road, the farm and the mine.

GUARDS MINE DANGERS

COLORADO FUEL AND IRON COMPANY TELLS OF SAFETY WORK DONE

The annual report of the medical and sociological departments of the Colorado Fuel and Iron Company has been prepared with little regard for expense. The facilities of this company for welfare work among its employes is shown in the numerous half-tone engravings, which are the feature of the publication. The book also contains the report of the safety department. It shows that during the past four years \$20,000 has been spent in advancing safety work on the properties of the company. The larger items of expense have been for equipment of overhead cranes with railings and guards; erecting platforms and railings at overhead valves and at trestles where material is dumped; guards for emery wheels, covers for gears; automatic speed limits for stationary engines, and subways under dangerous tracks.

SAVED BY RESCUE APPARATUS

Effectiveness of self-rescue apparatus is shown clearly in a report just issued by K. H. Chisholm, of the Bureau of Mine Rescue Station of Pittsburg, Kans. Mr. Chisholm invested an explosion which occurred in the mine of the Central Coal & Coke Company, near Pittsburg, Kans. Two shot-firers were in the mine at the time of explosion. One was killed outright. The other, with the aid of a self-rescue apparatus, that he was wearing, escaped unharmed. It is certain he could not have escaped the afterdamp, had he not been thus equipped. Judging from the amount of oxygen left in the apparatus, the shot-firer was in the mine for twenty minutes after the explosion.

PROPOSED COAL RATES SUSPENDED

Proposed increases in rates on coal from Illinois mines have not met the approval of the Interstate Commerce Commission, and the new tariff has been ordered suspended until June 29. The Chicago, Burlington and Quincy and the Toledo, Peoria and Western are the principal railroads concerned.

PRESIDENT'S COMMISSIONERS DEFER THEIR TRIP TO COLORADO

Decide That Conditions in Fall Will Be More Propitious for Effort to Settle Strike Troubles There—Letters Made Public

More can be accomplished next fall in Colorado than at present, according to the conclusion of the President's Colorado Coal Commission. In a letter to the President, Seth Low, Chas. W. Mills and Patrick Gilday, the commissioners, say:

Your Colorado Coal Commission begs leave to submit herewith a report of progress to date.

Upon receipt of your letter of instructions, dated December 21, 1914, the commission addressed a letter to the Hon. George A. Carlson, governor-elect of Colorado, handing him a copy of your letter of instructions to the commission, and offering to him our good offices in any way in which we could be of service. The letter of the commission was addressed to the governor-elect of Colorado rather than to the then governor, with the idea of emphasizing the fact that this commission was appointed not to take any action with reference to the past but in order to be of service if possible in bringing about better conditions in the coal mining industry of Colorado in the future. Immediately after his inauguration on January 12, 1915, Governor Carlson acknowledged the receipt of the commission's letter and welcomed its cooperation in all mutually agreeable ways.

COOPERATION PLEDGED

At the same time Governor Carlson transmitted to the commission so much of his message as dealt with industrial relations, calling out attention to the fact that the legislature was likely to pass a law creating an industrial commission and providing for a system of workmen's compensation. The governor also said that he felt safe in pledging to your commission the cooperation of the industrial commission of Colorado when appointed. Subsequently Governor Carlson forwarded to the commission a copy of the bill dealing with these subjects as introduced. Through the National Civic Federation, of which Mr. Low is president, Colorado has secured the services of competent experts for the detailed study of this measure. Your commission, through its chairman, has kept in touch with this proposed

legislation and is satisfied if the bill becomes a law substantially in the form approved by the experts consulted by the Colorado Legislature the State of Colorado will be in the front rank of States having good legislation for diminishing accidents among workmen; for the payment of suitable compensation in cases of industrial accident; for the regulation of conditions affecting the health of workmen in industry; for official mediation and voluntary arbitration in case of industrial disputes.

Subsequently, your commission sent a letter to all of the coal operators in Colorado, 132 in number, inclosing a copy of your instructions to the commission and tendering our good offices.

OPERATORS SEND LETTER

From seventy-one of the operators, producing sixty-one per cent. of the coal mined in Colorado, your commission has received a joint reply to its letter. These seventy-one operators say explicitly that no useful purpose can be served by your commission going to Colorado, and the temper in which they write says, even more eloquently than their words, that with them "the dead past" has not yet "buried its dead."

From the Colorado Fuel & Iron Co., and from several of the smaller operators, your commission has received letters conceived in a very different spirit. We have recently had the opportunity to confer with Mr. Welborn, the president of the Colorado Fuel & Iron Co., and with a group of the New York directors, including Mr. John D. Rockefeller, jr. The attitude of the Colorado Fuel & Iron Co., as stated that these gentlemen is frankly to cooperate with this commission. They explained to your commission in great detail the efforts that company is making to get into closer relations with its employees and to provide a means for the joint consideration of grievances and for their correction. The company does not speak of its plan as a thing complete in itself; but it hopes that it will prove to be the first step in a movement which will bring about increasingly good results. These gentlemen, however, while not opposing an early visit of your commission to Colorado, are clearly of the opinion, like the seventy-one operators who signed the joint letter, that a visit of this commission to Colorado at pres-

ent would be untimely. They point out, as the others do, that the new legislation now under consideration in Colorado will have an important bearing on the conditions to prevail after its passage, and that for this reason, among others, a visit from this commission at the present time might easily tend to postpone the normal development of better conditions. While this commission has nothing to do with the controversies of the past, it is called upon to work with conditions created by the past. For the time being nothing seems to be so essential for Colorado as the opportunity which time gives to learn and to apply the lessons which the recent past must have taught.

TIME A FACTOR

After careful deliberation, therefore, upon every aspect of the question, your commission is persuaded that it can accomplish more by waiting until next autumn before going to Colorado than by going now. We have already secured the cooperation of the governor of Colorado, of the Colorado Fuel & Iron Co., and of several of the smaller operators; and we believe that time will enlarge the area of cooperation, not only through the force of public opinion but also, as we hope, by the demonstrated usefulness of cooperation. Time will also serve to show whether the new steps taken by the Colorado Fuel & Iron Co. are in the right direction, and generally whether the new State legislation is adequate and how it is working. For all of these reasons we think a later visit to Colorado will be more useful than one made now. We have reason to believe that this opinion is shared in labor circles. Your commission in reaching this decision does not forget that it was appointed to do everything in its power to advance the welfare of the miner as well as of the operator. The commission, indeed, is profoundly convinced that the welfare of one is inextricably bound up with the welfare of the other. It is clear, however, that a commission without legal authority and which, therefore, must depend for anything that it can accomplish either upon the willing cooperation of all parties or upon the force of public opinion must be so considerate in its approach to the subject as to disarm even prejudice if that be possible. For the work which you have committed to this commission we are convinced that time will be a friendly element in bringing about the desired results. While, however, your commission has postponed its visit to Colorado for reasons stated, we assure you that we shall keep in close touch with the situation, and shall be ready at any moment to meet as best we may any new development.

REPLY TO OPERATORS

Mr. Low then wrote the Carbonado Coal Mining Co., The Aztec Coal Mining Co., The Victor American Fuel Co.,

The Rocky Mountain Fuel Co., and the others as follows:

I have received your letter of January 30, 1915, addressed to me as chairman of the President's Colorado Coal Commission. Without discussing at the moment the substance of your letter, I feel that the references you make to my colleagues upon the commission reflect the lack of accurate information. I am sure that you do not wish to jeopardize the interests of the future by acting upon a misapprehension. It is quite clear, as Edmund Burke says, that "You cannot indict a whole community"; and I respectfully submit that it is equally impossible justly to condemn every member or even every officer, of an organization, because you have a quarrel with the organization.

At the time of the appointment of the commission both of these gentlemen were unknown to me; but I was glad to serve with them because they were appointed by the President of the United States. After several conferences with them, I wrote to the President in December a letter which contained the following paragraph:

"I cannot close this letter without saying to you how well I think Mr. Mills and Mr. Gilday are qualified for the work to be done. Each has had wide experience in the technical aspects of the problem with which we have to deal, and I like the spirit displayed by both of them in the several conferences which we have had."

Further association with them has confirmed my first impression. Since the receipt of your letter, and at their request I have made personal inquiries of men by whom they are well known. I find that both of them are believed to be by character, by temperament, and by experience well qualified for the work which they have been appointed to do. It may interest you to know that Mr. Mills in his mines employs only non-union men.

The inclosed report of progress to the President will acquaint you with the present attitude and plans of the commission.

SHORTAGE OF LABOR FEARED

In his annual report to the shareholders of the Cambria Steel Company, President W. H. Donner intimated that there may be a shortage of labor during the ensuing year as a result of the falling off of immigration since the European war began. Figures of the United States Bureau of Immigration show that immigration has fallen away more than 50 per cent, as compared with the figures for the corresponding months of 1913 since the beginning of the war.

The American Mining Congress

The American Mining Congress is a voluntary association supported by the dues and fees of its members. It is striving to bring about:

First—Safety and efficiency in mining operations.

Second—Intelligent conservation with a view to the highest development and use of our mineral resources.

Third—The stimulation of investment in practical mining operations by showing that mining is a legitimate business when intelligently conducted.

Fourth—Uniformity in state laws governing mining operations carried on under like conditions.

Fifth—Such federal co-operation through research and investigation as will furnish the basis for intelligent state legislation, and will solve those problems of economical production, treatment and transportation which are essential to an increase in mineral production.

Sixth—The improvement of the economic conditions underlying the coal mining industry.

If you are interested in this work, now is the time to help; do not wait until those who are now carrying the burden have become discouraged.

The appended application blank will show the way. Come in and bring the neighbor who should join this movement. Mail application to

THE AMERICAN MINING CONGRESS

Munsey Building, Washington, D. C.

THE AMERICAN MINING CONGRESS

APPLICATION FOR MEMBERSHIP

.....191.....

I hereby make application for membership in THE AMERICAN MINING CONGRESS and agree, if accepted, to abide by the By-Laws, Rules and Regulations of said organization and to pay the dues required by same.

Name.....

Occupation.....

P. O. Address.....

Recommended by.....

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THE MINING CONGRESS JOURNAL

APRIL-MAY	CONTENTS	1915
NEW ALASKAN RAILROAD		181
COAL MINE FATALITIES		184
INDIANA COAL OPERATORS VISIT WHITE HOUSE		185
EASTERN OHIO SITUATION		186
NEW GUIDE BOOK FOR TRAVELERS		187
UTAH FORMS MINING CONGRESS CHAPTER		188
CREDIT FOR LAYLAND RESCUE WORK		189
ANACONDA COPPER COMPANY MAKES GOOD SHOWING		190
BUSINESS IMPROVEMENT EXAGGERATED		191
RIITMAN PROCESSES BEING TRIED OUT		193
PANAMA MACHINERY FOR ALASKA		194
COPPER EXPORTS NEAR NORMAL		195
ARIZONA NEEDS PUBLICITY		196
MEXICAN MINING TAXES		197
WATER POWER SOURCES ALONG COLORADO RIVER		198
WEST VIRGINIA'S COMPENSATION LAW		199
ADVANTAGES OF CONCRETE HOUSES		202
DEPARTMENT OF TRANSPORTATION PROPOSED		203
HIGH PRICES FOR SPELTER		208
EDITORIALS		209
PANTHER CREEK MINE FIRE		215
LAW BREAKING CAUSES ACCIDENTS		219
RECENT LEGAL DECISIONS		220
MINING MEN TO ASSEMBLE IN SEPTEMBER		223
PENDING LEGISLATION		224
RAILROAD REVENUES INCREASE		226
PERSONALS		227
NO DISCRIMINATION AGAINST AUSTRIANS		230
PREMIUM SYSTEM TO PREVENT ACCIDENTS		232
MOVING PICTURES OF MINING SCENES		233
ENGINEERS PROTEST AGAINST PROPOSED LAW		234
WORK ON PENNSYLVANIA QUADRANGLE		237

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To the Members of the American Mining Congress:

Do you know that you are the owners and publishers of the MINING CONGRESS JOURNAL? We trust you will realize the responsibility of this ownership and that you will lend your active assistance in making the Journal a greater success.

Real mining men should be active members. An application blank will be found on another page of this issue.

Associate memberships are designed for those not actively interested in mining, but who are willing to assist a state Chapter of the Mining Congress in helping to develop the Mining industry within the State. All memberships include subscription to the MINING CONGRESS JOURNAL.

Every member of the Mining Congress should undertake to send in at least one application each month. Will you help by having the following blank filled in and mail to this office?

SUBSCRIPTION AND APPLICATION FOR ASSOCIATE MEMBERSHIP
IN THE
AMERICAN MINING CONGRESS

.....191.....

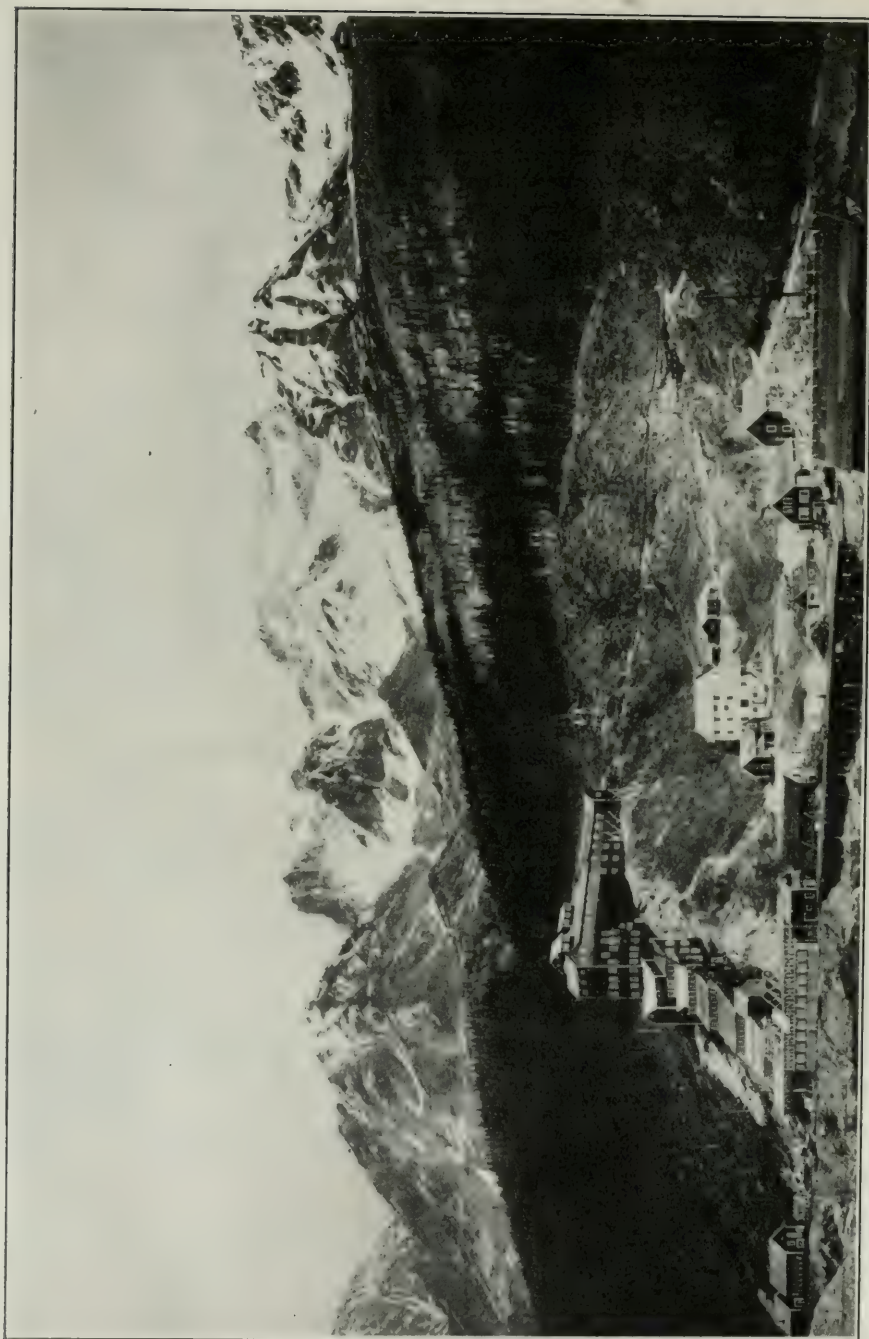
I hereby make application for Associate Membership in THE AMERICAN MINING CONGRESS, and agree, if accepted, to abide by the By-Laws, Rules and Regulations of said organization and to pay the dues required by same. Herewith find \$1.00 fee and \$2.00 dues for one year, including subscription to the Mining Congress Journal (\$1.00 of which is designated as subscription to Journal).

Name.....

Occupation

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Recommended by.....



BONANZA MINE, ALASKA

One of the notable developments in the northern territory. It is at the terminus of the Copper River Railroad

THE MINING CONGRESS JOURNAL

Official Organ of the American Mining Congress

ERA OF RAPID DEVELOPMENT IS EXPECTED ALONG NEW ALASKAN RAILROAD

Thomas Riggs, Jr., Discusses Plans of Commission and Resources of Area to be Traversed—A. H. Brooks, of Geological Survey, to Lead Party of Scientific Men Into Territory June 1

Announcement by the President of the United States of the selection of the route for the Government railroad in Alaska makes April 10 a red letter day in the history of the northern peninsula. None doubts that this date will mark the opening of an era of prosperity and development never approximated, north of the sixtieth parallel.

In the course of the discussion regarding the proper route for the construction of this railroad opinion has been divided. Granting a little time, however, for the disappointment of some few to wear off, it is expected to be a very general admission that the President showed good judgment in his selection. One of the advantages which stands out strongly in the selection of the Seward route is the insurance of the operation of two important railroad lines into the interior. The Copper River and Northwestern is certain to continue in operation and doubtless will be extended from time to time.

BROOKS TO LEAVE SOON

Alaska is certain to attract greater attention from this time forward than ever before has been the case. A. H. Brooks, having charge of the Alaskan mineral resources division of the Geological Survey, is soon to leave for Alaska

at the head of a splendidly equipped party of geologists, topographers and their assistants. The selection of the route for the Alaskan railway will enable them to devote a considerable portion of their efforts to that section of the territory which will be tapped by the new railroad.

According to Thomas Riggs, Jr., one of the members of the Alaskan engineering commission, which is to have charge of the construction of the road, every effort is going to be made to hurry the completion of the line. In connection with the construction of the road Mr. Riggs said:

"It will first be necessary to put in operation the existing line. New construction will be limited this year, owing to the small amount of money which will be available after the purchase price of the road and other preliminary expenses have been met.

VALUE PROVEN

"It is greatly to the interest of the nation that the Matanuska coal fields be opened at the earliest possible moment. Development work in this field has gone to such an extent that there is little doubt as to the vastness and quality of coal available. Tests on the cruiser Maryland show that this fuel answers all the requirements of naval coal.

"It is not my intention to intimate that the Behring River field on the Copper River and Northwestern does not contain just as good coal, despite the fact that the sample submitted did not pass the naval tests as satisfactorily.

"There are mining properties of all classes on the Kenai peninsula. There are many lode prospects and some operating mines. We are constantly getting reports of important discoveries in the

which must be during the four months open season. The opening of the railroad will reduce the freight rate one-half, greatly reduce the length of time necessary for transportation and make possible shipments throughout the year.

"Wood is used almost entirely as fuel at present. One-hundred thousand cords a year are used. The average cost is \$11.50 a cord. The operation of the railroad will make coal available on all parts



DEEP PLACER MINING AT FAIRBANKS

This district will be benefited directly by the new railroad

foothills of Mount McKinley, which is near the line of the Seward road up the Susitna valley.

"The Fairbanks district, which will be served by the railroad, has an annual production of \$2,500,000 in gold. Recent strikes on the Tolovana River, which is fifty miles from Fairbanks, have led to the belief that another great gold producing district has been discovered.

HALVES FREIGHT RATE

"At the present time the average freight rate from Seattle to Fairbanks is \$70 per ton. The time necessary for transit is from three weeks to a month,

of the territory tributary to the line at \$5 or less, per ton. As one ton of coal equals two cords of wood it will allow the operation of machinery, dredges and power plants in order to handle the great low-grade gravel areas.

"Agricultural development is certain to follow the opening of the railroad. Much of the country in the Tanana and other valleys is suitable for farming, and without question, enough products can be raised to feed the mining population.

COAL PRINCIPAL TONNAGE

"One of the principal sources of revenue of the railroad is certain to be the

tonnage of coal handled. A large amount of this coal will be moved to the seaboard for naval purposes and for the making of coke. Coke in Alaska at present is costing \$13. This can be replaced by Alaskan coke of superior quality for \$7.

"Another important source of revenue will be the ore and concentrates shipped out for treatment. It is not at all unlikely that a smelter eventually will be erected in Alaska.

be used for ties. In the existing roads in Alaska it has been demonstrated that ties made of native spruce have an average life of five years. This compares favorably with the ties of other varieties of wood."

GEOLOGISTS HURRY NORTH

No time is to be lost by the Geological Survey in doing its part toward hastening the development of that portion of



TYPICAL PLACER MINING IN ALASKA

"Difficulties to be encountered in constructing the road will be no greater than in other mountainous regions. The grades across the coastal mountains will be no steeper than the existing grades on transcontinental lines in the United States. Away from the coast the snowfall is light and offers no great difficulties of maintenance or operation. In the interior the average snowfall is between 2 and 3 feet. It can be handled readily with a pilot plow. There is some heavy bridging of steel and concrete, but in the main, we intend to build only a pioneer railroad such as will answer the requirements of the country. Native timber will

Alaska which will be opened by the railroad. Mr. Brooks and his party will be on the ground about June 1. Some of the members of the party already are en route to Alaska. Mr. Brooks' party will consist of S. R. Capps, geologist; J. W. Bagley, topographic engineer; C. E. Griffin, topographic engineer; R. H. Sargent, topographic engineer; D. C. Witherspoon, topographic engineer; F. H. Moffit, geologist; J. B. Mertie, associate geologist; H. M. Eakin, associate geologist; Theodore Chapin, associate geologist; B. L. Johnson, associate geologist; George L. Herrington, junior geolo-

(Continued on Page 216)

COAL MINE FATALITIES**SHOW DECREASE IN 1914**

**Deaths From Gas Explosions Increase, But
There were Fewer Dust
Explosions**

**More Efficient State Inspection Given as
One Reason for Improved
Showing**

Fatalities in coal mines in the United States in 1914 were 334 less than during the preceding year. The total fatalities were 2,451 as compared with 2,785 for 1913, says the report of the Bureau of Mines.

The principal causes of fatal accidents, that show a material decrease, were coal-dust explosions 96 per cent., haulage, 11 per cent.; and falls of roof and pillar coal 10.6 per cent. The net decrease in underground fatalities were 365, or 14 per cent. This is equivalent to a saving of one life every day during the year.

There were 331 fatalities due to gas explosion as compared with ninety-one in 1913, making a net increase of 240. Of these 331 fatalities, 261 were due to four serious explosions.

There were slight increases in fatal accidents from explosives and electricity. There was also a net increase of twenty-six fatalities in shaft accidents, or 42 per cent., and on the surface a net increase of five, or about 3 per cent. The net decrease for the year for both underground and surface accidents at coal mines as compared with 1913 was 12 per cent.

Exact figures for the number of men employed are not yet available, but taking the estimates furnished by the inspectors for part of the States and using for the other States the number of men that were employed in 1913, the estimated total number of employes for the year is 742,868 as compared with 747,644 in 1913. The fatality rate, therefore, becomes 3.30 per 1,000 men employed in 1914 as compared with 3.73 in 1913.

Excluding 1912, when the rate was 3.27 per 1,000 men employed, the 1914 rate of 3.30 per 1,000 is lower than any year since 1903.

Although there was a reduction of 12 per cent. in the number of fatalities, there was also a reduction of 10.5 per cent. in the production of coal. The United States Geological Survey estimates the production for 1914 as 510,000,000 short tons as compared with 570,048,125 tons for 1913. The fatality rate per 1,000,000 tons of coal produced in 1913 was 4.89 and in 1914, 4.81. With the exception of 1912, when the rate was 4.41, the 1914 rate is the lowest yet recorded for the United States. The amount of coal produced per fatality in 1914 was 208,078 short tons, which, with the exception of 1912, is the largest on record. The production per fatality in 1913 was 204,685 tons, in 1912 it was 226,469, and in 1907 was 144,325 tons.

There were 316 lives lost in disasters in which more than five men were killed at one time compared with 464 in 1913, a net reduction of 148, or 32 per cent. in this class of accidents.

It is not possible to attribute these lower rates to any one particular influence. They may be assigned in part to any of the following agencies or to a combination of any or all of them: Closer and more careful inspection by the State inspector; better enforcement of laws and regulations by the operators; the miner's realization of the dangers attending his daily work, and his efforts to reduce accidents, due to the educational campaign conducted in his behalf; the more general use of safety lamps in doubtful mines; the use of permissible explosives; humidifying dusty mines; first aid and rescue training which saves lives that might otherwise be lost by reason of injuries received; the enactment of industrial accident compensation laws; and last but not least the spirit of cooperation on the part of all concerned.

Making Large Shipments

Large shipments of bullion are being made by the Tom Reed Gold Mines Company, according to the *Mohave Miner*. The mine is said to be in splendid ore and an unusually high saving is being made by the use of the cyanide process.

INDIANA COAL OPERATORS TELL OFFICIALS OF SELLING AGENCY PLAN

Committee Lays Project Before President, Department of Justice and Federal Trade Commission—Full Understanding Shown of Difficulties Surrounding Producers—Folly of the Continuance of Existing Wasteful Methods Brought Out

Officials in Washington have been acquainted with the untenable position of coal operators in many parts of the United States. The entire matter was analyzed this week at the White House, at the Department of Justice and before the Federal Trade Commission by a committee from the Indiana Bituminous Coal Operator's Association.

OPERATOR'S STATEMENT

Among other things, the following facts were brought to the attention of the President and other authorities having jurisdiction.

The Indiana bituminous coal operators find themselves suffering from over-production and intense, unrestrained competition, with the result that a number of the operators have been forced into the hands of receivers, and a large number of the balance are suffering seriously from the situation.

The condition affects the laborer equally with the operator because of intermittent work. During the year 1914 they only secured 148 working days. The result is the entire absence of conservation. On the contrary, it promotes a waste of the coal in the ground because it requires the cheapest and easiest method of getting coal out, to meet the price at which it has to be sold. On a conservative estimate not more than 50 per cent. of the coal is recovered.

ENORMOUS WASTE CAUSED

This means that in the United States as a whole, upwards of two hundred million tons of coal are wasted each year.

There are 114 companies in the States of Indiana, producing 16,000,000 tons of coal each year—a little over 2 per cent. of the total production in the United States, and in the largest market, they do not supply over 16 per cent. of the tonnage of that market.

In order to maintain this position, they are obliged to maintain something like 300 selling offices and 900 salesmen. The expenses in the mines are increased by the necessity of maintaining an organization that can pro-

duce the limit of the mine's capacity on twenty-four hours' notice.

They are competing within the boundary of their own State with the non-union States of Kentucky and West Virginia, and the union employe States of Ohio, Pennsylvania and Illinois. Outside of their own State they are competing with Kentucky, West Virginia, Ohio, Pennsylvania, Illinois and Iowa.

MUST CUT EXPENSES

The situation is such that it is impossible for them to advance their prices and the only method left open to them to maintain their standing in the trade is to reduce their expenses, which can only be accomplished by cooperation among them.

The tentative plan which meets with their approval consists of a single selling company, which would decrease the selling cost several cents per ton, and would enable them to standardize the business and by intelligent distribution of orders, establishing of storage facilities for fine coal, for which there is an erratic demand, they could increase the present earning fully 10 cents per ton, without in any way disturbing the present price.

LABORERS APPROVE

The representatives of the labor element of the industry have repeatedly urged such a movement in public investigations of conditions by several of the States.

The operations of the Indiana coal producing industry is confined to about five States and do not extend over the entire country. It is a fact that two of the large companies in other states produce and market a greater amount of coal than is produced and marketed in the State of Indiana.

We do not believe that it is the intention of the law or the Government to force an industry into bankruptcy. On the contrary, when such a condition arises, the sentiment of the people at large is, and that of the law and Government should be, to allow the industry involved to adopt such reasonable methods as to avoid bankruptcy, and maintain their position in the commercial world.

It is with that idea in view that they have presented the situation in detail to the Federal Trade Commission, together with a plan which they propose to inaugurate, in a measure, to protect themselves.

The position taken by the Indiana operators is that they prefer bankruptcy to a criminal prosecution for violation of the law.

IN FULL SYMPATHY

It is the unanimous opinion of the Federal Trade Commission, expressed by its chairman after the full commission had listened to the case of the operators, that the coal producers are entitled to full sympathy in regard to the purposes sought, but that it is not within the power of the trade commission to authorize in advance any particular course of conduct.

That the Department of Justice is fully cognizant of the details of the question was shown during the conference with the coal operators. There is reason to believe that the Department will construe very liberally any feature of the Sherman law which might be interpreted as preventing natural economies in operation. It is, of course, against the policy of the attorney-general to forecast possible prosecution.

It is not expected that the President will take any personal action to relieve the Indiana operators, but it is their desire that he be advised fully as to the principles involved which have prompted the laying of the whole matter before officials in Washington.

NO CHANGE IN EASTERN OHIO STRIKE SITUATION

Department of Labor is Optimistic, But Reasons Behind It Are Not Revealed

Advices from the Department of Labor and from the field itself indicate that the strike situation in eastern Ohio is no nearer settled than was the case months ago. While officials at the Department of Labor have hopes that a settlement may be reached in the near future, they are giving out none of the reasons on which such an optimistic conclusion is based.

William Disston Passes Away

William Disston, senior member of Henry Disston Sons, saw manufacturers, of Philadelphia, died April 5.

REPORT ON MATANUSKA COAL BY GRIFFITH REGARDED HIGHLY

In connection with the opening of the Government railroad in Alaska, it is interesting to note that the report made upon the Matanuska coal fields by Mr. William Griffith, of Scranton, Pa., in 1905, is fully endorsed by the Government tests. At this early day Mr. Griffith pointed out the undoubted naval quality of the coal and commented in detail on the advisability of opening this field for exploitation. He also proved the excellent coking properties of some of the Matanuska coals.

In many ways Mr. Griffith's report is the most comprehensive technical paper on the occurrence of coal in the Matanuska and it is to be regretted that it was not given wider publicity. Mr. Griffith was for a number of years a member of the Alaskan Committee of the American Mining Congress.

The Ko-Koals

A committee representing the Order of Ko-Koal, consisting of Charles K. Scull, Imperial Modoc; C. F. Kerchner, of Baltimore; W. A. Clark, of Massachusetts; president of the New England Retail Coal Dealers' Association, and Wellington M. Bertolet, secretary, Reading, Pa., met with the secretary of the American Mining Congress, at Philadelphia, April 16, at the Manufacturers' Club. The meeting was for the purpose of discussing the question of affiliation of the Ko-Koal Order with the American Mining Congress, with a view to strengthening the work of both organizations. Plans were discussed to accomplish this purpose, and the meeting adjourned with reasonable assurance that some plan can be devised for a complete working affiliation.

Names New Commissioners

Mayor Edward Jermyn, of Scranton, has appointed Arthur W. Long and Ralph Barrett as members of the new mine cave commission recently created by the city council.

RESOURCES OF WEST TO BE BROUGHT OUT IN NEW GUIDEBOOK FOR TRAVELERS

**Geological Survey Bringing Out Book Which Will Give Public Benefit of Accumulated
Data Collected During Decades of Investigation—Book Will Be in
Popular Language—Four Routes to Be Covered**

Carrying out its policy to give the general public more ready opportunities to benefit from its work the Geological Survey is preparing a guidebook for trans-continental travelers. It will follow, in many ways, the plan of tourist guidebooks, and will be filled with interesting information, in regard to the country along four of the principal routes. The work is receiving much of the personal attention of Dr. George Otis Smith, the director of the Survey.

CONTAINS 200 PAGES

The guidebook discusses, in an interesting and easily understandable manner, the natural resources of the country. It will contain 200 pages and twenty-five maps. The maps have been arranged in a clever manner, so that they can be unfolded from the book and followed as the contents is pursued. The maps are arranged on a scale sufficiently small to allow the traveler to follow each mile of his journey.

The four routes to be covered are: Overland, Sante Fe, Northern Pacific and Coast Line. It will not be a guide restricted to certain railroads, but will cover the whole West. The primary idea is to give the traveler a large insight into the resources, developed and undeveloped of the country west of the Mississippi. With that in view, an effort has been made to set forth, not only the mineral resources of the different sections, but also the agricultural possibilities. In order to make the work entirely authoritative, the cooperation of other bureaus of Government work has been secured. The railroads, also, have cooperated by furnishing alignments and profiles.

One of the most important features of this undertaking is making public, in a

form easy to assimilate, a large store of data which has been collected by the Survey during many years. Great care has been exercised in getting it into popular and readable language.

Considerable new work, however, has had to be done to make this work possible. While nine-tenths of the facts, perhaps, already were available in the records of the Survey, the necessary one-tenth, to fill out the running story, has required the services of expert geologists. These geologists were selected with especial attention to their familiarity with the region traversed. They also have made special trips over the routes, to bring all data up to date and to fill in such details as were missing. This work has been receiving the entire attention of the following geologists: M. R. Campbell, N. H. Darton, J. S. Diller, H. S. Gale, R. W. Stone, W. T. Lee. In addition to these men, many of the other employes of the Bureau have been able to furnish interesting facts from first-hand knowledge.

DIRECTOR'S STATEMENT

Director Smith, in his preface to these guidebooks, says: "The purpose of the series is to present authoritative information that may enable the reader to realize adequately the scenic and material resources of the region he is traversing, to comprehend the basis of its development and above all, to appreciate keenly the real value of the country he looks out upon." As illustrating the diversified natural resources that characterize different parts of the West, he adds: "One region may be such as will afford a livelihood for only a pastoral people, another may present opportunity for intensive agriculture, while another may contain hidden stores of mineral wealth that may

attract large industrial development; and taken together these varied resources afford a promise of long-continued prosperity for this or that State. To this interpretation of our own country the United States Geological Survey brings the accumulated data of decades of pioneering investigation, and the present contribution is only one type of return to the public which has supported its scientific work under the Federal Government."

Owing to the vast amount of data which have to be boiled down for this work, no estimate of the date of publication can be made at this time.

UTAH FORMS CHAPTER OF AMERICAN MINING CONGRESS

**R. C. Gemmell, of Utah Copper Co., Elected
First Governor of New Organization**

Prominent Mining Men Support New Body— Directors Are Selected

Utah has a chapter of the American Mining Congress. It was organized April 5, in Salt Lake City. R. C. Gemmell, of the Utah Copper Company, was elected governor of the State chapter. E. L. Wolcott, assistant secretary of the American Mining Congress, aided in the preparations which led to the organization of the chapter.

The chapter is launched under very favorable conditions. It has been given the support of a large number of prominent mining men in Utah. With reference to the organization of the chapter, Mr. Gemmell said:

"I shall do all I can to forward the interests of the local chapter of the American Mining Congress and, in fact, the mining industry in general. Arizona people speak favorably to me of the work of their chapter recently organized by Mr. Wolcott. So far as Utah is concerned, if we are to make a success of the chapter, we must have the cooperation of the men in all lines of trade. It should embrace not only active mine operators and engineers, but lumber men, grocers and all who directly or indirectly are dependent in various ways upon mining. We must all work together in such

matters as legislation, freight rates and tariffs. If we go ahead in an energetic way we will be able to form a large chapter here which will result in material benefit to the mining industry and to all connected with it."

The directors elected are as follows:

Directors, three years—R. C. Gemmell, G. H. Dern, C. E. Allen, G. W. Lambourne, Fred Cowans, Duncan MacVichie, Thomas Kearns, John M. Hayes.

Directors, two years—William Wraith, C. W. Whitley, L. B. McCornick, J. C. Dick, M. P. Braffett, C. N. Strevell, C. E. Loose, E. S. Rolapp.

Directors, one year—R. J. Evans, J. F. Cowan, J. C. McCrystal, Solon Spiro, Walter Fitch, E. L. Carpenter, J. Will Knight, Imer Pett.

Executive committee—R. C. Gemmell, M. P. Braffett, G. W. Lambourne, Imer Pett, J. C. Dick.

MONTANA PROFITS HEAVILY BY RISE IN METAL PRICES

Senator Walsh Says Washington's Prosperity Depends on Condition of Business in States

Senator T. J. Walsh, of Montana, chairman of the Senate Committee on Mines and Mining, in a recent address before the Washington Chamber of Commerce, pointed out that at the present price, as compared with last year's prices, Montana's copper production for the year 1915, is worth six million dollars more than its production in 1914, and its zinc production three million dollars more than in 1914.

He pointed out that Washington, as the nation's capital, always must depend for its prosperity upon the prosperity of the several States and accompanied his invitation to visit Montana by an eloquent description of the scenic wonders of the Northwest.

Report Good Ore in Philippines

Reports of the discovery of valuable copper deposits are coming from the Zambales Mountains, in the Philippine Islands.

UNDUE CREDIT ACCORDED HELMET MEN IN LAYLAND DISASTER, SAYS HENRY

Chief of West Virginia Department of Mines Takes Exception to Statements Given Out Lauding Bureau of Mines Men for Leading Role in Rescue Work—Miners Sign Statement

The Secretary of the Interior and George S. Rice, chief engineer of the Pittsburgh branch of the Bureau of Mines, have given undue credit to the helmet men connected with the bureau, according to Earl A. Henry, chief of the Department of Mines of West Virginia.

Mr. Henry takes exception to many of the statements which were furnished THE MINING CONGRESS JOURNAL in connection with the Layland disaster.

Mr. Henry has the following to say:

"Referring to an article in the MINING CONGRESS JOURNAL, under date of March, 1915, relative to the explosion at the Layland Mine, located at Layland, W. Va., operated by the New River and Pocahontas Consolidated Coal Company, I desire to say that I have read this article with considerable interest, especially that part which refers to the work of the rescue force, equipped with helmets being divided into three crews which worked in shifts, one shift always in advance of the force of miners engaged in bratticing and recovering the bodies. This is a misstatement of facts and is misleading to the public and unfair to the volunteers who rendered such valuable service.

BERTOLET IN CHARGE

"The rescue work was in charge of Mr. H. M. Bertolet, the general superintendent, and the State Mine Department, ably assisted by Mr. Oscar Kneer and John Clapperton, superintendents under Mr. Bertolet, also several hundred volunteers from the different mines in the New River Coal Fields.

"While Secretary Lane and George S. Rice, through the press, give great credit to the helmet men connected with the Bureau of Mines, they would be unable to convince the mining people of

at the Layland disaster. The interview any heroic work accomplished by them makes the statement that the helmet men worked in advance of the State mine inspectors and others; that their work consisted of constructing brattices and arranging the ventilation in the dangerous sections of the mine, making it possible for the parties engaged in the rescue work to proceed without any danger whatever. If the helmet men constructed any brattices or did anything to assist in arranging a system of ventilation, it is unknown to any person who was on the ground.

LITTLE DANGER INCURRED

"There were no extremely dangerous conditions met with in the rescue work, as the mine did not liberate explosive gas and there was no evidence of great force in any section of the mine, there being only a few light slate falls to travel over. The greatest difficulty was the after-damp resulting from the explosion.

"I have no desire to do or say anything that might detract, or take away, any honors due to the helmet men, but I honestly believe that credit should be given to those to whom credit is due, and I desire to go on record by saying that no more heroic men could be found on God's earth than those who volunteered their services and assisted in the rescue work at the Layland Mine, and they were mine superintendents, mine foremen, fire bosses, miners and mine laborers from the different mines in the New River field, who hurried to the scene and entered into this work of their own free will and did not expect to be rewarded with medals of honor for anything they might do in an effort to remove the dead, or rescue the living, if any be found entombed in the mine—

their only motive being one of humanity, and in no way seeking honors.

HOW THE FIVE ESCAPED

"As to the helmet men rescuing a number of live persons, this is a misstatement of facts. At midnight on Friday, March 5, all of the rescue workers were called from the mine and the fan stopped so that arrangements could be made on Saturday morning to reverse the air current and about 8 o'clock Saturday morning five Italians walked out of the mine with open lights, making the statement that on the morning of the explosion they had enclosed themselves behind a brattice at the head of No. 9 left entry off main No. 3, approximately a mile and a quarter from the entrance of the mine. These men had each day tried to make their way out but could not do so by reason of the after-damp, but after the fan had been stopped and no movement in the air current for about seven hours, these men were able to travel to the outside, at which time they reported that forty-two men were bratticed off in the tenth left heading off No. 3 main haulage, a distance of 500 feet farther in the mine than the No. 9 heading. The No. 9 and No. 10 headings were the regular working places of these men and was in no way affected by the explosion except the cutting off of the ventilation.

"The question that is raised by the mining people in this State is, Why should the use of helmets be necessary to rescue the entombed men when they were able to use an open light all the time they were entrapped in the mine and when rescued were able to travel to the outside without the use of helmets?

"In conclusion I desire to say that the Department of Mines of West Virginia is willing to cooperate and assist the Bureau of Mines in all its efforts to determine the cause of these disastrous explosions and will cheerfully adopt any recommendations given by them that will prevent another disastrous catastrophe in this State, but I do not believe that mine explosions can be prevented by long-winded statements given out to the Associated Press, booming the work of any person along this line."

MINERS ISSUE STATEMENT

Mr. Henry's letter was accompanied by a statement signed by a number of the men who were entombed. It reads as follows:

"We, the undersigned miners who were entombed in the Layland No. 3 Mine operated by the New River and Pocahontas Consolidated Coal Company, were rescued Saturday morning, March 6. In the rescue party were the following persons: H. M. Bertolet, general superintendent of the above named company; C. W. Workman, Cleve Martin, Chief Mine Inspector E. A. Henry, District Mines Inspectors R. B. Cobb, L. B. Holliday and Isaac Murray.

"Mr. Holliday and R. B. Cobb, district mine inspectors, were in the lead. In addition to the above number there were members of the Bureau of Mines with helmet equipment, but they were not in the lead. (Signed) Chas. Caldwell, Earl Aurentz, J. I. Caldwell, John Whalen, Ballard Clendenin, G. H. Hanson, Hugh McMillan, Geo. Parker, John Fitzpatrick, John Plesha, Sam Haggard and Caro Tullio."

OPERATING NEAR CAPACITY

Anaconda Copper Company Made Good Showing in March

During April the Anaconda Copper Mining Company expects to operate at 85 per cent. of normal capacity. Before the end of the month it is expected to have four additional mines working and to resume work at the Great Falls smelter.

During March the production was 25,800,000 pounds of copper. This is about 70 per cent. capacity. The output in February was 15,100,000 and for January, 13,700,000 pounds.

Publishes Remarkable Paper

Among the numerous remarkable things done by the Hill Publishing Company, of New York, may be included the Success Number of *Coal Age*, published under date of April 3.

BUSINESS IS BETTER, BUT IMPROVEMENT HAS BEEN EXAGGERATED, AUTHORITY HOLDS

Administration's Efforts to Create Optimism Criticized—Pig Iron Production Still Under Normal But Gradual Increase is Noted in Number of Furnaces in Blast—Exports of Machinery are Less

"There can be no doubt that commercial conditions throughout the country are steadily improving, but there is reason to fear that the real facts are being lost sight of in the great mass of exaggeration and misrepresentation reflected in the daily press. I doubt very much if studied efforts to boom business by syndicating reports of war orders and optimistic predictions are legitimate or really helpful."

These views of the present situation are those of W. L. Crounse, Washington correspondent of *The Iron Age* and an acknowledged authority on matters pertaining to the iron and steel industry. Continuing, Mr. Crounse said:

"President Wilson has had much to say about the 'psychological depression' through which the country has been passing. It seems to me that a prosperity based on the massing of the cheering items carefully selected from the day's news, and the subordination or rejection of every report of an unfavorable character can be nothing but a 'state of mind.' The conservative business man wants facts and not fancies as a basis for his confidence and has little use for either optimistic or pessimistic coloring.

OFFICIAL PROCEDURE

"We read in the daily press that the head of one of the Executive Departments transmits to the White House at intervals symposiums of newspaper clippings showing revivals in the industries of the country and these clippings in turn are reproduced in the dispatches of the Washington correspondents to their respective papers. The ultimate effect of such a proceeding is greatly to exaggerate the facts, for, of course, every unfavorable item in the news of the day is carefully excluded and the

casual reader receives an impression which real conditions do not warrant.

"Progress made by the iron and steel industry during the past few weeks has been very satisfactory, but there has been much exaggeration of the volume of export business covered by the general term 'war orders,' which has already become a favorite phrase with the daily press. According to the market reports of *The Iron Age*, the pig iron production of March was 2,063,834 tons, against 1,674,771 tons in February. On April 1 there were in blast 191 furnaces with a capacity of 70,591 tons a day, against 176 active on March 1, with a capacity of 63,033 tons a day. The present rate of production is the highest since April, 1914. It should be borne in mind, however, that even these figures are far below normal, the industry having been operating at much less than capacity for many months.

STILL EXPORTS LESS

"Judging by reports in the daily press, we have been doing a tremendous business in the exportation of iron and steel products to the countries now engaged in war, yet an examination of the statistics serves to prick a most deceptive bubble. According to reports of the Department of Commerce, the exports of iron and steel products, which are recorded in tons, amounted, for November, December and January last, to 397,359 tons, or at the rate of 1,589,000 tons a year. Yet in 1913 the total was 2,730,483 tons and in 1912 it was 2,947,596 tons. Bear in mind also that during the past twelve months the domestic demand has been very small—in some branches almost nothing.

"I recently had occasion to compile some statistics with regard to the exports

of machinery for the first eight months of the current fiscal year. Although I am fairly familiar with the industry, I had been somewhat impressed by the reports of enormous exportations of machinery, presumably for the equipment of foreign plants engaged in the production of munition of war and for other purposes. I was surprised to discover, however, that the total exports of machinery of all kinds for the eight months ended February, 1915, were valued at only \$52,929,000, as compared with \$77,327,000 for the corresponding months of 1914, a loss of 33 per cent. Only one important item in the entire list, namely, metal working machinery, showed an increase, the gain being about \$4,000,000. It is clear that the exportation of a considerable quantity of machine tools has been so exaggerated as to give the impression that American manufacturers of machinery can hardly supply their foreign orders. It is a highly significant fact in this connection that the domestic demand for metal working machinery is at a very low ebb and that practically nobody is in the market except a few manufacturers who have war orders.

MANY IDLE CARS

"A very reliable index of the commerce of the country is the extent to which the rolling stock of the railroads is actually in use. Current reports regarding the movement of merchandise of all kinds, and especially that en route to the seaboard, would give the impression that the country of late has experienced a marked revival, yet the American Railway Association reports that on April 1 there were 313,073 idle cars, or only 8,674 less than on March 1, when the war surplus set a high record for many months past.

"Of course, existing conditions are ripe for such demonstrations as have recently occurred in the New York stock market. Under the manipulation of professional traders the stocks of a number of corporations have been sent skyward with little reference to their intrinsic value or dividend prospects, except that the concerns were said to have received large war orders. Of course, there were thousands of amateur speculators and

a few real investors who followed the professional lead and assisted in boosting prices. In the press reports of this movement great prominence was given to the prosperity propaganda of the administration at Washington, which was utilized to give a roseate hue to the entire commercial future of the country. There can be no doubt that a number of corporations whose stocks have recently been heavily advanced will make considerable money out of their war orders, but these profits by no means justify the prices reached in Wall Street's professional 'ballooning' and, of course, the war cannot last forever. It is suggestive of the methods of professional speculators that while the stocks of certain corporations have been marked up because of prospective profits on war orders, many others have been advanced because of 'reliable indications of early peace.'

EXAGGERATION DENOUNCED

"It may be said that these artificial booms are better than panics or periods of depression. This may be admitted, but no movement can have a wholesome effect upon the commerce and industry of the country which is based upon misrepresentation or deception, or which depends for its success upon the stimulation of the gambling instinct latent in so many minds. Confidence is slowly returning, but conservatism is needed everywhere. The European war will furnish profits for a few American manufacturers, but the prosperity of our industries as a whole must depend upon the domestic demand which, although now showing signs of improvement, should not be overestimated. No healthful growth can be based on exaggeration."

DR. SMITH LECTURES ON TOPOGRAPHICAL MAP MAKING

Dr. George Otis Smith, director of the United States Geological Survey, delivered an illustrated lecture before the Home Club in Washington recently. He brought out the methods of making topographical maps. Many interesting features in the life of field parties were shown.

RITTMAN PROCESSES ARE BEING TRIED OUT ON COMMERCIAL SCALE

Aetna Explosives Company Expending \$200,000 in Producing Toluol and Benzol by New Method—Secretary of the Interior, as Trustee for Public, Takes Out Patents—Question Comes up as to Special Rewards to Government Employes Who Make Discoveries

Work preparatory to trying out the Rittman process of obtaining toluol and benzol has gone ahead steadily during the last month. The Aetna Explosives Company has turned over \$200,000 to the Bureau of Mines to make possible the manufacture of toluol and benzol on a commercial scale. This work is being done at Pittsburgh.

Negotiations are proceeding with several refiners for the production of gasoline on a commercial scale.

PATENTS BEING TAKEN OUT

Patents covering the Rittman processes are being taken out by the Secretary of the Interior, as trustee for the public. These patents cover the apparatus used in securing these products. It is necessary to take these steps in order to prevent private persons from taking out patents, which would make possible the collection of arbitrary sums before the public could enjoy the benefits of the discoveries. It has been found especially necessary to guard the apparatus used by Dr. Rittman. If patents could be secured by unscrupulous persons on certain of the apparatus employed by Dr. Rittman, they would be in a position to extort whatever toll they wished before the benefits of the discoveries could be given to the people.

In connection with Dr. Rittman's work the question has arisen whether a Government employe, making an important discovery, should be allowed any special reward. There seems to be a lack of a definite policy along this line. Some hold that an employe should receive substantial reward when accomplishing something of unusual importance. Others claim that the Government is entitled to all products of their labor.

QUESTIONABLE RESIGNATIONS

There are any number of cases on record where Government employes have resigned and shortly thereafter brought out important results of work along the same lines that they were handling in the service. It is suspected, in some of these cases, that the actual discovery was made while on the Government's pay roll. Rather than turn in all the results of his work, the employe was not able to resist the temptation of great financial reward, it is suspected. It is acknowledged by most Government officials that it requires a high idea of honor for an employe, on a \$2,500 salary, for instance, to turn over, without reward, a discovery or invention which easily could be turned to his own financial advantage.

On the other hand, it is contended that the Government is employing hundreds whose work results in little practical advantage. Unless the Government is to profit by the successes of the few who really achieve something of marked importance, the public is being saddled with a heavy expenditure, with little hope of return. Attention is called to the fact that privately owned corporations who employ scientists keep a very close check on their work. Each day's developments are so arranged as to become the property of several men. This policy gives additional assurance to the company that they will be the beneficiaries of any results which may be obtained from investigation in their laboratories.

MANNING HUNTS PRECEDENT

Van H. Manning, the acting director of the Bureau of Mines, is giving the study of this very question his personal attention. He is investigating precedents in all bureaus of the Government where

scientific work is carried on. As it stands at present, however, Dr. Rittman has no assurance of receiving more than his regular salary of \$3,000 per year. Mr. Manning states that Dr. Rittman's technical paper, which will go into detail as to his processes, probably will be ready for publication soon. He believes that this will do much to satisfy many of the doubting "Thomases" among technical men. There has been doubt expressed in many quarters as to the value of Dr. Rittman's discoveries.

With reference to the work being done on the Rittman processes, Mr. Manning has given out the following information:

MANNING'S STATEMENT

"The Rittman processes have as yet only been developed on a laboratory scale and it remains to establish their practicability in the industry. You will unquestionably appreciate the fact that, in the development of any process, certain equipment and ideas are involved which it is essential to have patented along with the basic idea itself in order to fully protect the process. Consequently if the development of these processes were left to private initiative alone, private interests would be able to patent this equipment and further ideas, to their own exclusive benefit, whereas if the Government participates in the development, these will all be given to the public along with the parent invention itself.

"It is for this reason that the department has decided not to give out any further information concerning the details of the process until complete information can be furnished concerning the details of a commercial plant construction and methods of operation on a scale of commercial magnitude.

"The benzol process is being developed in cooperation with the Aetna Explosives Company, Incorporated, a corporation organized under the laws of New York, having its principal office at No. 2 Rector Street, New York City. The Aetna Company has agreed to expend not less than \$200,000 in the development of the process. This work will be carried on in the city of Pittsburgh, in a plant which has been obtained for this purpose by the

company in question. The plant referred to was formerly operated by McClinck & Irvine, and is located at the junction of the Pennsylvania and Baltimore and Ohio railroads, just beyond the new Carnegie Technical Institute buildings.

"The cooperation is to come to an end as soon as this bureau is satisfied that a sufficient number of tests on an enlarged scale have been conducted to determine the commercial practicability of the benzol process. The products derived are, of course, to be the property of the Aetna Company, and this bureau is not aware what arrangements have been made by such company for the use or disposition of the products.

"Patents have been applied for on the Rittman processes, but the bureau is not prepared at this time to publish the specifications. These patents will take their regular course in the Patent Office.

"It is planned to make a similar arrangement for the development of the gasoline."

LITTLE PANAMA MACHINERY TO BE TAKEN TO ALASKA

Some seem to have lost sight of the act of Congress which provides that no charge is to be made for such of the Panama Canal machinery as may be found serviceable on the Alaskan railway. Widely circulated stories in the daily press have told of heavy purchases of canal machinery for the use of the Alaskan Commission. The truth of the matter is that H. P. Warren, an engineer representing the Alaskan Railway Commission, has visited the Canal Zone for the purpose of selecting such of the machinery not needed there as may be serviceable in Alaska. It is certain at this time, at least, that no great amount of machinery will be transferred from the Isthmus to the northern peninsula.

ALASKAN COPPER DEPOSITS SUBJECT OF NEW REPORT

A report on the copper districts of the Katchikan district, in southeastern Alaska, will be published by the Geological Survey in the near future.

PROTESTS TO STATE DEPARTMENT DWINDLE AS COPPER EXPORTS NEAR NORMAL

Agents of Allies Along German Frontier Fail to Discover Reexportations of Red Metal—Shipments to Neutral Countries Moving With Almost Accustomed Regularity—Cargoes Unloaded at Gibraltar Said to Have Been Sold

State Department officials, who are handling questions arising from the exportation of copper, declare that protests practically have ceased. From this, it is judged that copper exporters of the country are satisfied that no concession can be expected which will permit trading with Germany, Austria or Turkey.

It is the opinion at the State Department that "good enough" should be let alone. Shipments to neutral countries are moving with little interruption. Some few cargoes are being delayed, awaiting further investigation as to the consignee, but shipments to legitimate dealers in neutral countries are going forward with a minimum of delay.

NO REEXPORTATIONS

So far as the State Department has been advised, no reexportation of copper from neutrals into belligerent territory has been discovered by the allies. It is known that careful watch is being kept on shipments made across the frontiers of neutral countries. It is thought that the allies have agents in each place where there is an interchange of traffic along the frontier of the Scandinavian countries, as well as along the Dutch and Swiss borders. While it is understood that the neutral countries bordering on Germany are chafing under the restraints placed upon their commerce, they also realize that they are in a measure at the mercy of the allies. In order to be insured supplies for their domestic use, the reexportation of contraband brought from the United States is being discouraged.

It is reported that negotiations have been closed for the purchase of the copper unloaded at Gibraltar early in the war. It is said that the English Gov-

ernment has paid the market price for this copper, as well as allowing liberal payment for other losses occasioned. No advices to this effect, however, have been received by the State Department.

EXPORTS INCREASE

Exports continue to increase, and there is evidence that business is better at this time than any dared to hope a few months ago.

Exports of copper, during the week ending March 20, the latest figures available, show that 15,628,736 pounds were exported during the week. France is the heaviest buyer, with Sweden in second place; England and Italy occupy third and fourth places, respectively.

OPERATORS OF MINES CANNOT AFFORD TO BE OUT OF TOUCH WITH EVENTS IN WASHINGTON

In covering in detail the work affecting mining being done in the government departments THE MINING CONGRESS JOURNAL is giving its readers information that is covered by no other publication. A vast amount of work of interest to mine operators is in progress in the National Capital. Many activities having a direct bearing on mining always are in evidence in Washington. No operator of a mine, regardless of the substance mined, can afford to be out of touch with these activities. A simple method of keeping abreast with news of importance to mine operators is to read each issue of THE MINING CONGRESS JOURNAL.

ARIZONA RESOURCES NEED PUBLICITY, SAYS C. F. WILLIS

**Director of Arizona Bureau of Mines Talks on
Work Before Arizona Chapter of
Mining Congress**

Arizona is in dire need of publicity, according to Charles F. Willis, director of the State's bureau of mines. He not only pleads for a greater effort to diffuse knowledge of the mining resources of the State but declares it to be the duty of every business man in Arizona to join the State Chapter of the American Mining Congress.

In a statement given out in Arizona recently, Mr. Willis says:

"An excellent start has been made in the development and organization of the Arizona Chapter of the American Mining Congress. Within the past month two local sections have been formed, the Gila County and the Pima County*sections, and it is expected that the next month will see several new sections organized for the purpose of giving the right sort of publicity to the mineral resources of the State. For many years publicity in mining has not been given the attention that it deserves, for the reason that the operations of the large corporations, through their perfect management and ability to control large capital, were successful without publicity. But the small operator and the prospector have needed assistance. False statements regarding investments have served to keep hundreds of thousands of dollars out of the mining States of the West. It is the endeavor of the Mining Congress, through its State and local sections, to correct this situation, and bring together in harmony every material industry of the State.

"All business depends upon publicity for its greatest success. This applies to everything from running a peanut stand to marketing a mine, and operating it, too, for that matter. Publicity may mean advertising in the newspapers or otherwise; the means differ with different kinds of business, but the one object is sought—to get the attention of the public.

"No doubt one of the reasons that mining has not prospered as well as it might

have in the last few years is that insufficient publicity has been granted to the industry. This does not apply to the large, well established operations as much as to the smaller. The mines that have become successful producers and dividend payers do not need publicity to the extent that the smaller, undeveloped properties do, yet publicity for the big fellows helps their smaller neighbors. The success of a district is bound up in the success of all the mines in it, large or small. The success of the mines strongly affects the property of all of the other business activities in the district. It behooves them all, then, to boost the basic industry—mining.

"The business men of all classes in mining communities can best benefit their own business by organizing and boosting mining. The truth has been recognized in some mining sections, and commercial clubs have sprung up which are giving considerable attention to promoting the mining activity of the districts around them by giving publicity to the mines and prospects. There is need for greater extension of this publicity aided by local and other papers. Help the struggling mines and prospects. They are the ones that need your help and you enthusiastic moral support.

Every business man in Arizona who has the welfare of the State at heart should be a member of the Arizona Chapter of the American Mining Congress."

LAST OF GEOLOGICAL SURVEY EXHIBIT SHIPPED

**Dr. Ashley Receives Many Compliments on
His Work for Panama-Pacific
Exposition**

The last of the Geological Survey exhibit for the Panama-Pacific Exposition left Washington the early part of the month. The Mount Lassen volcano exhibit was the last to be completed. Dr. George H. Ashley, the Survey's administrative geologist, who had charge of the preparation of the Panama-Pacific exhibit, is the recipient of much commendation for the comprehensive display, illustrating the work of the bureau.

DECREE OF CARRANZA MORE THAN DOUBLES MEXICAN MINING TAX

**Export Duty Levied on Gold, Silver, Copper, Lead and Zinc—Stamps to the
Value of Ten Pesos for each Pertenencia Must be
Affixed to Titles—Other Charges**

Persons owning mining properties in that portion of Mexico controlled by Carranza have been forced to pay greatly increased taxes. In a decree, effective March 3, Mr. Carranza orders several radical changes in the mining laws.

A copy of the decree, furnished by the Mexican Embassy in this city, reads as follows:

Articles 2, 5, 9 and 10 of the law of March 25, 1915, concerning the stamp and mining privilege taxes are modified and augmented in the following manner:

Ores, produced in the Republic or those which come from foreign countries, are subject to the stamp tax law, without any exceptions, except those set forth in the law itself. The tax in the future will cover:

Metals exported in the form of ore, earth, cyanides, sulphides, smelter residue, or in any other form in which they may be combined with substances which, strictly speaking, are not metals, will pay as follows: Gold, at the rate of 110 pesos per kilogramme; silver, at the rate of 2.60 pesos per kilogramme; copper, at the rate of 3 1-2 centavos per kilogramme; lead, at the rate of 6 centavos per kilogramme; zinc, at the rate of 5 centavos per kilogramme.

Metals, so treated in the country as not to be combined with other metals, will enjoy a discount of 20 per cent. from the foregoing taxes without regard to value.

The copper content of any other mineral will not be taxed if it forms less than 3 per cent. of the total. The same will apply to lead if the occurrence is less than 10 per cent., and to zinc when it is less than 15 per cent.

Stamps, to the value of 10 pesos for each pertenencia, must be affixed to each title granted. This is without regard to the substances to be mined.

The annual tax on mining properties shall be as follows:

A charge of 12 pesos annually will be made for each pertenencia (4 pesos each four months), regardless of the minerals being exploited.

If the number of pertenencias of a mining property, or of different mining properties, belonging to the same owner and located in the same mining district, exceed 10 pertenencias, they shall pay 12 pesos for the first ten pertenencias; for those exceeding 10, and not exceeding 20 pertenencias, 15 pesos; for those exceeding 20, but not exceeding fifty pertenencias, 18 pesos; for 51 pertenencias and over, it shall be at the rate of 24 pesos.

All delayed payments on mining properties may be made up to June 30, 1915, and payments must be made in Mexican gold. The decree became effective March 3.

VILLA ISSUES ORDER

Even more drastic changes in the mining law have been made by Francisco Villa, who is in charge of the revolution in the North. The northern chieftain maintains that all mines must be kept in operation. He specifies that no mines may be left idle for more than sixty days. He holds that the voluntary suspension of mine exploitation, without a justified cause is detrimental to the nation, inasmuch as there is withdrawn from commercial activities means of necessary wealth and likewise the public treasury is depleted by the nonpayments of taxes which should accrue when the properties are exploited permanently.

Maintenance of watchmen on the property is not considered as active mining. Holding of large properties is made practically impossible by a provision, the Villa order which specifies that one pertenencia

out of each five must be exploited actively. Unless all owners of properties begin active work within 120 days, they are to forfeit their holdings. No individual in the future may denounce more than fifteen contiguous pertenencias and no company or corporation may denounce more than 150 pertenencias in the same mining district, except in the event that the Secretary of Fomento after having received a report from an expert, increases this number where it is absolutely necessary, by reason of the nature of the ore or the ground to be explored.

MUST ADVISE DEPARTMENT

The mining agents in each district are charged with the duty of keeping themselves and the department advised. It is practically certain that the United States will come to the rescue of any of its citizens who may be deprived of their properties due to this order.

It is conceded unanimously here that the Dictator in Northern Mexico has no right to assume powers that permit of the changing of fundamental property laws. It is well known that it is impossible for all holders of mining properties to open work at this time. Communication is very uncertain and supplies are prohibitive in their costs. It is certain that there will be no general attempt to comply with the Villa orders.

NEW MAP OF PORT VALDEZ DISTRICT IS NEARLY READY

A new map of the Port Valdez Mining District, of Alaska, will be out May 15, it is announced at the Geological Survey. The map will be a detailed one, and will facilitate greatly mining operations in that district.

In order to issue THE MINING CONGRESS JOURNAL during the early part of the month, rather than the latter, the April and May numbers are combined. The June number will be out the last week in May and should reach all subscribers by June 1.

WATER-POWER SOURCES ALONG COLORADO TO BE SHOWN

Report, To Be Published Soon, Covers Drainage Basin From Wyoming to Gulf of California

Mining men from Wyoming to the Gulf of California will be interested in a special report now being compiled by the Water Resource branch of the Geological Survey. The report will continue the results of studies of the water resources of the Colorado River drainage basin. It is the first report ever made of that area. Miners are interested in information that will be contained in this report, principally due to the studies made of water-power resources. It also will be very valuable to those interested in irrigation. The entire Colorado Valley, covering portions of the States of Wyoming, Colorado, Utah, Arizona, New Mexico and California, will be included.

NATIONAL RADIUM INSTITUTE MAKES SECOND SHIPMENT

Inability To Secure Apparatus From Germany Handicaps Crystallization Work

Three hundred milligrams of radium have been delivered from the National Radium Institute, being operated by the Bureau of Mines in Denver. This is the second delivery of radium from the plant. The radium has a market value of \$19,000. Owing to the impossibility to secure special apparatus needed for the crystallization of radium, that part of the operation has not kept pace with the extraction from the ore. It may be impossible to get this apparatus until German trade is reestablished.

KENAI PENINSULA RESOURCES SET FORTH IN REPORT

The geology and mineral resources of the Kenai Peninsula of Alaska, which has been prepared by the United States Geological Survey, probably will be ready for distribution May 1.

WEST VIRGINIA'S WORKMEN'S COMPENSATION LAW COMMENDED HIGHLY

Held to Be Best Statute of This Kind Ever Enacted in the United States—Commission Directing System is Given Ample Powers—Agricultural and Domestic Service Exempted

According to competent authorities, West Virginia has a workmen's compensation law which is superior to the laws adopted by other States. Some of the salient features of the bill are:

The office of State compensation commissioner is created. He shall be appointed by the Governor before May 31, 1915. His term of office is six years. A bond of \$10,000 is required with the faithful performance of his duty. The commissioner may be removed by the Governor for specified causes. The salary of the commissioner is \$6,000 annually. The commissioner may hold hearings within the State. All persons, firms, associations and corporations regularly employing other persons for profit or for the purpose of carrying on any form of industry or business in this State are employers within the meaning of the act. All persons in the service of employers for the purpose of carrying on the industry or business in which they are engaged are employees within the meaning of the act. The act does not apply to domestic or agricultural service, traveling salesmen, to employees of any employer who are employed wholly without the State. No members of a firm, officer, manager, superintendent or assistants or their deputies are deemed employees by the act.

INDUSTRIES CLASSIFIED

Industries are divided into classes. Coal mines, including their tipples, power, light, heating and ventilating plants, tramways, private tracks and sidings, and accessory and auxiliary plants working in or with by-products form one of the classes. Quarries, stone crushers, gravel pits, mines other than coal mines, and working with asphalt, cement, stone or other building material not otherwise

specified, power propelled ferries, sand diggers and other water craft form another class.

The risk of the different classes is determined from the record of the employers as shown upon the books of the commissioner. The commissioner will fix the rate of premium for each class according to the risk. Ten per cent. of all that is paid into the workmen's compensation fund shall be set aside for the creation of a surplus fund until such surplus shall amount to \$100,000, after which time 5 per cent. of all money paid into the fund shall be credited to the surplus until such time as in the judgment of the commissioner such surplus shall be sufficiently large to cover the catastrophe hazard and all unanticipated losses.

ANNUAL READJUSTMENT

On July 1, 1916, and annually thereafter, a readjustment of rates will be made by each of the several classes in accordance with the experience of the commissioner in the administration of the law. Any employer who shall elect to pay into the workmen's compensation fund the premiums provided by this act shall not be liable to respond in damages at common law or by statute for the injuries or death of any employee during any period in which such employee shall not be in default in the payment of premiums. Each employer electing to pay the premiums must post notices in conspicuous places about his place of business stating that he has made such election. They shall constitute sufficient notice to all employees.

Each employer is authorized to deduct from the pay of his employees for each month 10 per cent. of the premium paid or to be paid for such month in propor-

tion to the pay received by them respectively for the month. Failure to pay all premiums and penalties for two succeeding months will deprive the employer of the benefits afforded by the act and shall terminate the election of the delinquent employer to pay into the workmen's compensation fund as herein provided. Each employer is required to deposit at all times an amount at least equal to the premiums for the last two preceding months.

MEDICAL TREATMENT

Medical, surgical and hospital treatment may be extended up to \$150. In some cases of permanent disability this may be extended to \$300. No compensation will be paid when injury or death results from a self-inflicted injury, willful misconduct, disobedience to rules and regulations approved by the commissioner, or caused by the intoxication of the employee. Every injury or death resulting to an employee from the deliberate intention of his employer, the dependents shall have the privilege of action against the employer for any excess of damages over the amount received under the act. In case death ensues from injury within a period of twenty-six weeks funeral expenses not to exceed \$75 may be paid from the fund. If the period of disability does not last longer than one week, no reward will be allowed.

Where compensation is due an employee, under the provision of the act, payment is to be made according to the schedule, which is in part as follows:

If the injury causes temporary total disability, the employee shall receive during the continuance thereof 50 per cent. of his average weekly earnings, not to exceed a maximum of \$10 per week, nor to be less than a minimum of \$5 per week.

If the injury causes temporary partial disability, the employee shall receive 50 per cent. of the weekly loss in wages, not to exceed a maximum of \$10 per week.

The award shall continue not to exceed twenty-six weeks in case of temporary disability. Some few exceptions are made which will allow payments to continue for fifty-two weeks.

If the accident causes permanent disability, the percentage of disability to total disability shall be determined and the award computed and allowed as follows:

For a 10 per cent. disability, 50 per cent. of the average weekly earnings for thirty weeks.

For a 20 per cent. disability, 50 per cent. of the average weekly earnings for sixty weeks.

For a 30 per cent. disability, 50 per cent. of the weekly earnings for a period of ninety weeks.

For a 40 per cent. disability, 50 per cent. of the average weekly earnings for 120 weeks.

For a 50 per cent. disability, 50 per cent. of the weekly earnings for a period of 150 weeks.

For a 60 per cent. disability, 50 per cent. of the average weekly earnings for 180 weeks.

For a 70 per cent. disability, 50 per cent. of the weekly earnings for a period of 210 weeks.

For a disability exceeding 70 per cent. and less than 85 per cent., 40 per cent. of the average weekly earnings during the remainder of life.

For a disability from 85 to 100 per cent., 50 per cent. of the average earnings during the remainder of life.

If a deceased employee be under the age of 21 and unmarried and leave a dependent father or mother, the father, or if there be no father, the mother, shall be entitled to a payment of 50 per cent. of the average weekly wages, not to exceed a maximum of \$6.00 a week, to continue until the employee would have been 21 years of age or until the death of the dependent if it occurs before the employee would have been 21 years of age.

If the deceased employee leave a widow or invalid widower, the payment shall be \$20 per month until the death or remarriage of such widow or widower, and in addition \$5.00 per month for each child under the age at which he or she may be lawfully employed in any industry to be paid until such child reaches that age. It is provided that the total payment shall not exceed \$35 per month.

If the deceased employee be a widow or widower and leave a child or children

under 15 years the payment shall be \$10 per month to each child until the age of 15. The total payment in any case is not to exceed \$30 per month.

No sum shall be paid to a widow or widower who shall have been living separate or have been abandoned by the employe for twelve months next preceding the injury, and who shall not have been supported by him or her during such time.

Payments may be made in such periodical installments as may seem best to the commissioner in each case.

The commissioner may make necessary expenditures to obtain statistical and other information to establish the classes provided for. Any person, firm or corporation knowingly failing to make any report or perform any duty required by the commissioner within the time specified shall be guilty of a misdemeanor and upon conviction shall be punished by a fine of not more than \$2,500. False reports are to be punished under laws governing perjury.

Any person who shall knowingly secure or attempt to secure larger compensation, or compensation for a longer term than he is entitled to, shall be deemed guilty of a misdemeanor and upon conviction shall be fined not to exceed \$500 or imprisonment not exceeding twelve months or both, and shall cease to receive any compensation from the fund. Employers subject to this act who are of sufficient financial responsibility to insure the payment of compensation, or employers of such financial responsibility who maintain their own benefit funds or systems of compensation to which their employes are not required or permitted to contribute, or such employers as shall furnish bond or other security to insure such payments may elect to pay individually and directly or from such benefit funds.

Working Night Shifts

In order to take advantage of the present price of zinc, a number of Utah mines are working night shifts for the first time in their history.

ANACONDA COMPANY ORDERS ALL SAFETY DEVICES USED

Foremen Ordered To Stop All Practices That Entail Danger in Any Form

An idea of the extent to which the Anaconda Copper Mining Company is going into the matter of protection to workmen is shown by the following order issued to its superintendents and foreman. The order is from C. F. Kelley, the vice-president of the company, and reads as follows:

"The Anaconda Copper Mining Company expects all superintendents and foremen to make every effort to prevent injury to employes. All practices which are likely to be the cause of an accident must be stopped. Much good can be accomplished by designing new construction and machinery with all practical safeguards, and you should take steps to see that this is done. Help to make and keep the mines and plants safe.

"Expenditures necessary for such purposes will be authorized. Nothing which will add to the protection of the workmen should be neglected. The safety and welfare of the workmen is of the greatest concern."

Arrange Field Meet Events

Events of the field meet of the Bureau of Mines and the American Mine Safety Association, to be held in San Francisco, have been arranged. Mine rescue demonstration, first aid demonstration and the coal dust explosion will be on the program for September 23. First aid, rescue and rock drilling contests will take place September 24. The award of prizes and souvenirs will be made in Convention Hall the night of September 24.

Issue New Catalogue

A new catalogue of 250 pages has been issued by Jenkins Brothers. It is of convenient size for the pocket and is filled with interesting data and cuts of their valves, mine packings and the other well-known specialties of this firm.



MULTIPLE-TENEMENT DWELLING OF CONCRETE CONSTRUCTION. FIVE ROOMS EACH; ALL MODERN CONVENIENCES

ADVANTAGES OF CONCRETE HOUSES ARE POINTED OUT

Recommended by Bureau of Mines Because They Are Durable, As Well As Fire and Vermin Proof

Since its incipency the Bureau of Mines has paid close attention to housing conditions in mining camps. The public health service has cooperated in this work. A paper by Joseph H. White has just been issued by the Bureau. It is entitled "Houses for Mining Towns." The purpose of the bulletin, the Bureau of Mines states, is to supply facts on the building of well-ventilated, well-lighted, warm, attractive and economical houses for miners.

Mr. White goes into the question in much detail. He takes up the matter of the importance of the town-site, the advantages of establishing towns near the place of working and the possible advantages of building a town at some distance from the mine. Streets, gutters, sidewalks and alleys come in for full discussion.

Considerable space is given to the ma-

terial of which it is best to construct houses in mining camps. Houses made of poured concrete are mentioned favorably, due to the fact that they are very durable, fireproof, and, to a large extent, vermin proof. Houses constructed in this manner have been found to be very satisfactory at Gary, Ind., where they are being used extensively. As circumstances are such in most mining camps that frame houses must be used, more attention is given this class of construction than any other.

A variety of designs is urged. Great stress is put upon the need of a maximum amount of sunlight in each dwelling. The use of electricity for lighting is recommended strongly. In the long run it will be more economical, it is held.

Some of the other topics discussed in the bulletin are fireplaces, stoves, chimneys and flues; interior and exterior finish; foundation, framework, roof, the yard and its appurtenances, and water and wastes.

The necessity of preventing mosquito breeding is emphasized. United and continuous efforts by employers and employes are necessary to eradicate this dangerous pest, it is pointed out.

DEPARTMENT OF TRANSPORTATION IS URGED BY RAILROAD HEAD

**Interstate Commerce Commission Should Be Supplanted by Division of Government
with Representation in Cabinet, New York, New Haven and Hartford
President Declares—Latest Traffic Developments**

"I believe it would be well to have a department of transportation, with a secretary of transportation at the head of it, who should be a member of the Cabinet. Such a man would of necessity have to champion somewhat the rights and privileges of the transportation business, as the Secretaries of the Treasury, Commerce and Labor speak for their particular subjects." This is an extract from an address made recently in Norwich, Conn., by President Elliott, of the New York, New Haven and Hartford Railroad.

President Elliott's remarks have been the basis of much comment in Washington. It is realized here that the railroad problem is one of the greatest which confronts the Government today.

It would be unfair to say that the Interstate Commerce Commission has not been a success. At the same time, there are many features of the transportation question which seem to baffle the commission. President Elliott suggests the abolishing of the commission, but replacing it with a department of the Government which would greatly increase power of action and would give a broader base for the regulation of railroads.

The very fact that the Interstate Commerce Commission is proving inadequate to handle some of the transportation problems of the country is being seized upon as an argument by those favoring Government ownership of public utilities. They claim that a department of the Government would soon find that the task of regulating transportation is beyond it, so long as the transportation lines remain in private hands.

Regardless of the wisdom of Government ownership, it is a matter of fact

that its advocates are increasing in number and are being drawn from the ranks of capable men.

DIMINISHES SELLING ZONE

**Increase of Western Rates Will Put Some
Producers at Disadvantage**

With reference to increasing rates on Western roads an interesting angle of the effect of the traffic situation on the coal mining industry in the Middle West is brought out by the leading editorial in the *Black Diamond* of April 3. The editorial reads as follows:

"The railroads of the West have been pleading lately for an increase in rates. They say they need the money. Perhaps they do.

"They are wondering why everyone does not rise to second their request. They wonder why the appeals made by high officials within the last five or ten years have made no more impressions. These are big men. What they say is sound. Why, then, the indifference?

"A case in point will prove that railway action does not justify public confidence. The one statement most often made by coal men is that competition between Eastern and Western producers in the Northwestern trade is keen.

"Eastern coal moves into the Northwest from the docks mainly by the Hill group of railroads, the St. Paul and the North Western.

"Western coal from Indiana and Illinois is moved into the Northwest by all rail. None of it originates upon any line owned by the Hill interests with the exception of a relatively small tonnage on the Burlington. Practically none of it originates on the North Western. But very little of it moves over the St. Paul.

"Thus the originating carriers on dock coal are entirely different from the originating carriers on Illinois and Indiana coal.

"To retain the status quo established by years of competition coal men have insisted that if there is a rate change on one group of carriers, there should be a similar rate change on the other. To lower one group rate or to advance another group rate would throw one or the other coal field out of the Northwest. When the market is often swung by a difference of 5 cents a ton, a change of rates may mean a change in that section's source of supply of coal.

"The railways are not ignorant of this situation because it has been called to their attention literally hundreds of times in ten years. Regardless of that fact, they have filed new tariffs in which a 10-cent-a-ton advance is imposed on coal coming from Indiana and Illinois, while no advance is named on coal from the docks.

"Naturally, the Western operators represent the suggestion and are wondering by what legerdemain the Northwestern roads convinced the Central Western roads that the latter should advance their rates, while the former should charge the same old figures.

"It begins to look as though the Hill roads and the others had 'put one over' on the Illinois and Indiana lines. Something has blinded the latter officials to the apparent effect of the change. The situation is hard to understand since the Western lines must know that the proposed change would lose their operators business and therefore would lose them traffic.

"The statement has been made many times that the Illinois and Indiana operators will withdraw any objection to an increase in rates, provided it is horizontal. They are forced, however, to fight the proposed advance, even when they believe that the railroads ought to have it, merely because it will amount to giving away a certain part of their selling zone."

Reparation Awards Announced.

Reparation has been allowed by the Commission in the following cases of interest to miners: The Consolidated

Coal Company versus the Louisville & Nashville Railroad; Mineral Fuel Company versus Lexington & Eastern Railway Company; T. E. Wilson versus Southern Pacific Railway; Warner-Youghiogeny Coal Company versus Pittsburgh & Lake Erie Railroad Company; Wilkes-Barre Anthracite Coal Company versus Lehigh Valley Railroad Company; Witherbee, Sherman & Company versus Delaware & Hudson Company; Devoy & Kuhn Coal and Coke Company versus Chicago, Rock Island & Pacific; N. D. Nichols versus Northern Pacific Railway Company; Krutt & Voelker Coal Company versus Illinois Central; E. Robinowitz versus Chicago, Rock Island & Pacific.

HEARINGS ANNOUNCED.

Coal Rates From Taylor, Pa., Subject of Hearing in Scranton, April 22.

Hearings have been arranged by the Commission as follows: April 22, at Scranton, Pa., before Examiner Bell the matter of coal rates from Taylor, Pa., and other points to Tidewater and New York points. At Baltimore, before Examiner Waters, the Wright Coal & Coke Company versus the Hagerstown and Frederick Railway, and the case of the Atlas Coal & Coke Company versus the Pennsylvania Railway. May 4, at New York, before Examiner Fleming the New Jersey Zinc Company versus the Central Railway of New Jersey. May 5, at Washington, oral argument before the Commission in the matter of coal rates from Oak Hills, Colo. May 6, in Washington, oral argument of the case of the Union Sulphur Company versus the Baltimore & Ohio Railway. May 10, at Chicago, before Examiner Bell, the matter of ore and smelter products rates from Salt Lake City, Utah, and other points in Utah, Nevada and California to Eastern destinations. This case is known as I. & S. 578.

Petroleum Rates Advanced.

In the matter of rates on petroleum and its products, in car loads, from Alton and Wood River, Ill., to all points mentioned in tariff I. C. C. No. A-50,

basing on Cairo, Ill., the carriers have been authorized to establish rates to correspond to the advances made by the Central Freight Association lines under the findings of the Commission in the 5 per cent. rate case without observing the long and short haul clause of the fourth section of the act to regulate commerce.

OPPOSE RATE CLAIMS

Carriers Claim Union Sulphur Company is Virtual Monopoly

Spanish pyrites are replacing to some extent crude sulphur in the manufacture of paper, according to information contained in a brief submitted by the carriers in the case of the Union Sulphur Company versus the Baltimore & Ohio Railroad Company. The Union Sulphur Company objects to an increase in rates from the Atlantic seaboard to various interior destinations. Testimony taken in the case shows that the Union Sulphur Company has a virtual monopoly on its products in the United States. In the manufacture of sulphuric acid iron pyrites from Spain take a much lower rate. This is due to the fact that pyrites can be loaded in open equipment and may be moved at the convenience of the carriers, whereas sulphur must be handled in tight box-car equipment. The carriers maintain that pyrites is a much inferior product and naturally is entitled to a lower freight rate. Crude sulphur, they claim, is well able to hold its own and is not prejudiced to existing rates.

The carriers go even further and intimate that the Union Sulphur Company is in the commanding position of a virtual monopoly and that it desires to save additional revenue for the operation of its mines and its own vessels which carry the sulphur to North Atlantic ports. The sulphur is mined in Louisiana, 69 miles from the nearest port.

The manner in which the Union Sulphur Company obtained this commanding position in regard to sulphur is an interesting story in itself. Formerly the greatest bulk of the world's sulphur was furnished by Sicily. While it has been known for more than a hundred

years that extensive beds of sulphur exist along the Gulf Coast of the United States it never has been possible to mine them, owing to the fact that the sulphur beds which were at a depth of 500 feet were covered with quick sand. This made the sinking of shafts impossible.

During the early days in Louisiana a number of strenuous efforts were made to mine this sulphur. One French company had sections made for lining the shafts. These were brought at great expense, from France, but after many efforts and much money had been expended it was found impossible to sink the shafts even with their use.

Through the genius of Herman Frasch, a method of mining the sulphur was devised. Mr. Frasch's process provided for the introduction of steam into the sulphur deposit. When the sulphur melts it is pumped to the surface. In this manner great quantities of sulphur are mined at a minimum expense. By this process the Union Sulphur Company is in a position to command the world's market of sulphur. It is understood that the company has an agreement with the Italian Government to refrain from entering certain European territory so as not to destroy, with one fell swoop, the entire Sicilian industry.

COAL RATES ATTACKED

Geographical Position Should Be Recognized, Meeker & Co. Claims

An interesting contest for rates commensurate with geographical advantages is before the commission. The case is that of Henry E. Meeker versus the Erie Railroad Company. Mr. Meeker attacks the reasonableness of rates charged by the carriers for the transportation of anthracite coal, in carloads, from the Wayne Washery, at Clemo, to Tidewater, at Undercliffe, N. J. The rates charged from Clemo are the same as those applying to a much more extended district. The complainant contends that he is entitled to materially lower rates than other mines which are situated at a considerable distance farther from Tidewater. He also brings out the fact

that his property is situated on the eastern slope of the mountains, while other properties, taking the same rate, are so located that their product must be hauled over the summit of the ridge. He claims that he is entitled to a more reasonable rate, owing to the favorable geographical location of his washery.

In a brief filed with the Interstate Commerce Commission recently, arguments supporting his contention were presented by Mr. Meeker, who is the head of Meeker & Company, with main offices in New York. It is asked that the commission determines just and reasonable rates which should be charged from the Clemo to the coast.

REGISTER FEW COMPLAINTS

Mine Operators Not Frequent Users of Interstate Commerce Commission

Attention has been called to the fact, at the Interstate Commerce Commission, that mine operators apparently are not greatly interested in traffic matters. Lumber manufacturers and mercantile interests submit many complaints. This is resulting in the removal of many transportation hardships.

It is believed that the fewness of complaints from mine operators is not due to any lack of cause, but rather to the fact that no great amount of attention has been given this branch of their business.

INTEREST IN OIL CASE

Petroleum Rates Between Kansas and Nebraska Points Attacked

Due to the number of similar cases, much attention is being attracted by the case of the Mutual Oil Company of Kansas City, against the Atchison, Topeka and Santa Fe Railway Company. The oil company challenges the reasonableness of the rate of 26 cents for the transportation of petroleum and its products, in carload lots, from Coffeyville, Kans., to Superior, Neb., and a subsequent rate on the same products between the same points of 20½ cents. The complainant also challenges the rate of 7

cents for the transportation of the same products, in carloads, from Webber, Kans., to Superior, Neb., and also suggests that a reasonable rate for the transportation from Coffeyville to Superior would not exceed 12½ cents and that a reasonable rate from Webber to Superior should not exceed 3 cents.

It is asked that the commission fix a reasonable rate in each case. Reparation amounting to over \$4,032.94 is involved in this case. Briefs in the case have been submitted by the oil company and the carriers and an early decision is expected.

TRAFFIC MEN TRY IN VAIN TO INTERPRET AMENDMENT

Cummins' Alteration in Act to Regulate Commerce Causes Perplexity—A Pennsylvania Case

Under the heading "Discovering A Law," the New York *Annalist* describes the complex situation created by the enactment during the last hours of the recent session of Congress, of the Cummins' amendment to the Act to Regulate Commerce.

As originally offered, this amendment was designed to remove the limitation upon the carriers' liability in the shipment of live stock, but as amended in the rush hours, it prohibits railroads from allowing the 10 per cent. decrease in consideration of the limitation of liability in case of loss.

Over 200 traffic men recently met in Washington with the Commission, for the purpose of arriving at some conclusion as to the exact meaning of the amendment. No general agreement was reached, there being as many different opinions as there were different speakers who discussed the amendment. It was thought by many that the effect of the amendment will be to require a 10 per cent. increase in freight rates. In practice it is not likely this will be allowed, although it is evident, if the prior rate was fair, that some additional charge is justified for the increased liability which the railroad must assume in consequence of the removal of its right to limit liability in case of loss.

Another law not enacted hurriedly but deliberately, seems also to be in the process of discovery. The State of Pennsylvania, in 1913 enacted a law levying a tax of 2 1-2 per cent. of the value of hard coal at the mines, amounting to approximately 10 cents per ton, on the anthracite production of that State. This law grew out of the unfortunate but general belief that the mining industry is able to stand any burden which it is possible to put upon it. The mine operators were forced in self-protection to advance the price of coal, although contending the law was unconstitutional.

It was estimated by the auditor general that the statute would bring into the State treasury between four and five million dollars revenue annually, which was regarded as a proper recompense for the carrying off to other States of one of the State's principal products. While the companies are contesting the case in court, they are endeavoring to have the law repealed. This situation advances additional argument for the framing of a comprehensive mine tax law, uniform in its application under like conditions.

To Hear Copper Cases

The hearing of the case of the Tennessee Copper Company versus the Southern Railway has been set for May 10. Testimony will be taken by Examiner Pugh in Washington. Several cases which the Tennessee Copper Company has against the Louisville and Nashville Railroad will be heard at the same time.

Fatalities Decrease in January

Reports made to the Bureau of Mines by State mine inspectors indicate that in all 157 men were killed in and about the coal mines in the United States during January, 1915, as compared with 203 during January, 1914.

Deducting four fatalities in January, 1914, for which there are no comparable figures for January, 1915, the figures become 157 for January, 1915, and 199 for January, 1914, or a decrease of forty-two, or about 21 per cent., in 1915 as compared with the previous year.

RATE INCREASE ALLOWED

Ore and Smelter Products to Pay More Freight from Utah

Suspension of proposed increases in rates on ore and smelter products from Salt Lake City, and other points in Utah, Nebraska and California, to Eastern destinations, has been set aside by the Commission.

Ask Lower Oil Rates

Petroleum shipped in car loads from Wyoming to Montana points should take a 50-cent rate, according to a complaint which has been submitted to the Commission by the Mutual Oil Company, of Kansas City. The defendant is the Chicago, Burlington and Quincy, and other roads. The carriers maintain that the 73-cent rate, which is being applied is reasonable.

HAS LITTLE TO SAY ABOUT GERMAN COPPER DEVELOPMENT

Efforts to induce I. Wolf, Jr., president of the American Association of Commerce and Trade, of Berlin, to discuss the development of copper deposits in Germany and Austria, since the outbreak of the war, have proved unavailing. Mr. Wolf is in New York, doing what he can to maintain trade between the United States and Germany. He also is reticent with regard to the actual conditions surrounding German activity in the coal-tar products industry.

Coal Rate Suspended

Proposed increases in coal rates from Toluca, Ill., have been suspended until August 15 by order of the commission.

Increased Coal Rates Suspended

Increases in rates on coal from Illinois mines, which were to become effective April 5, have been suspended by the Commission until June 29.

HIGH PRICES LIMIT HOME CONSUMPTION OF SPELTER

**Spectacular Increases Call Forth Special
Bulletin by Survey**

**Unusual Demand From Europe—Zinc Re-
sources of U. S. Can Supply Anticipated
Needs**

Such attention has been focused on the unprecedented and spectacular rise in the price of spelter in January, February and March, that the Geological Survey has issued a special bulletin devoted to information in regard to spelter. The bulletin is by C. E. Siebenthal. A diagram, showing the average weekly price of spelter at London and St. Louis during 1913 and 1914 and for the three months of 1915 is very explicit. A list of the active zinc smelters of the United States and their capacities is given. The plants with special retorts are listed. A table shows the zinc available for spelter in the United States for 1907 to 1914, inclusive. The production of spelter in 1914 by States is compared with the production in each year since 1905. The production of secondary zinc also is given. The world's production of spelter from 1906 to 1913, inclusive, is made a portion of the report. Another item deals exhaustively with the consumption of primary spelter in the United States, 1907 to 1914. The exports during the years 1906 to 1914 are tabulated, as are the imports of zinc ore 1904 to 1914. Causes for the advance in the price of spelter are attributed entirely to the export demand for zinc for war purposes. In discussing the condition of the market the report says:

"The production of primary spelter made a substantial gain in 1914, and this, taken in conjunction with the large stocks, made available a far greater supply of primary spelter than ever before. Although the production of secondary spelter fell off markedly, nevertheless the total spelter available for consumption was the greatest in the history of the industry. Only the enormous exports of spelter for use in the war prevented a great increase in stocks. As it was,

stocks were greatly reduced from the quantities in hand at the first of the year and the midyear, and at the close of the year were only moderately large.

With respect to the future the following observations are made:

"If spelter-consuming industries in the United States enjoy prosperous conditions in 1915, so that the total spelter consumption makes its normal gain (which, however, in view of the high price of spelter and the resulting effect on domestic consumption, is scarcely probable), figured on the totals for the last six years, the total domestic spelter consumption for 1915 would approximate 397,000 tons. If to this we add a year's domestic exports at the rate shown since the beginning of the war in Europe, 180,000 tons, and a year's foreign exports at the rate during the latter half of 1914, equal to 17,000 tons, we get 594,000 tons as the possible demand for spelter. This, however, is not the maximum possible quantity to be demanded. It appears that spelter is in a highly advantageous position as far as the statistics afford evidence, and the only danger to be apprehended is that the prevalence of high prices may so limit the domestic consumption as to partly offset advantage gained from the increased foreign demand. The high price of galvanized sheets, for instance, has led some rolling mill operators to advise their customers to substitute heavier black sheets coated with paint. It further appears that the zinc resources of the United States are amply able to satisfy any possible demand that is likely to be made upon them in the immediate future, without drawing upon the zinc tailing piles of Australia."

PENNSYLVANIA SHOWS BIG DECREASE IN MINE FATALITIES

A decrease of 32 per cent. in the number of fatal accidents in the soft coal mines of Pennsylvania is shown in the report of James E. Roderick, the chief of the State Department of Mines. The number of men killed during 1914 was 413. This compares with 611 for the preceding year. The number of men employed was 195,929 and 189,909 in 1914 and 1913, respectively.

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EDITORIALS

GOVERNMENT POLICY AND THE ALASKA NORTHERN

No more forceful illustration of the baneful effects of a shifting governmental policy can be found than the history of the Alaska Northern Railway just purchased by the United States Government for \$1,150,000.

The matter is referred to because of its close association with the proposed changes in the laws concerning Western public lands.

While it is doubtful whether the road is worth the purchase price to the Government, yet it cost its owners very largely in excess of that amount. Its owners claim that it cost above \$5,000,000. A reasonable estimate of its legitimate cost would be \$40,000 per mile, or \$2,840,000. The Government's estimate of the cost of 416 miles is \$26,800,000 or \$64,000 per mile. The seventy-one miles purchased legitimately cost more per mile at the time it was built than it should cost now to construct the proposed line. What are the causes which lead the owners of the Alaska Northern Railway to sell (and probably gladly) on a basis of \$16,338 per mile a road which probably cost more

than \$40,000 per mile, the extension of which the Government estimates will cost \$64,000 per mile? The story is one which should cause shame to every American citizen. *Ex post facto* laws are forbidden by the Constitution of the United States. New policies having the same effect may not be forbidden by law, but are none the less unjust and dangerous.

At the time the construction of this railway was undertaken the settled policy of the Government was to transfer its lands at a nominal price to *bona fide* applicants under such restrictions as would protect the rights of other citizens who might desire to purchase. This policy had peopled the West and brought greatness to the nation. Acting upon the justified theory that this policy would not be changed, at least without proper notice, seventy-one miles of the Alaska Northern Railway was built.

Alaska, with its enormous fuel resources and its peculiar need, was importing its fuel from British Columbia and paying an import duty in addition to burdensome transportation charges. Citizens had made application for coal lands in the Matanuska coal field and were getting ready to supply the demand for fuel as soon as the Alaska Northern Railway could furnish an outlet for production. The lands were surveyed by the applicants at great cost, development work was done, hundreds of thousands of dollars were received by the United States Government for these lands, and everything promised gigantic development of business enterprises and an immensely profitable traffic for the new railway.

The glowing prospects for Alaskan development were attracting capital and enterprise, and the prediction was fully justified that in five years Alaska would have a half-million population; that her gold mines would be producing fifty millions annually and that she would be furnishing the Pacific Coast States with coal at one-half its then cost.

The projectors of the Alaska Northern Railway spent over five million dollars based on the belief in Alaskan prosperity. Given just governmental treatment the enterprise was more than justified.

About this time someone discovered that the Guggenheims were indirectly interested in some coal lands in another part of Alaska. It was good politics to fight the Guggenheims. Someone else discovered that the land policy of the Government which had developed the Western empire was wrong, and under the cloak of conservation undertook to change that policy.

This alliance, assuming for itself all of the virtues, and branding the Alaskan pioneers as land grabbers, timber and coal thieves, began a crusade which led to the withdrawal of all Alaskan coal lands from entry and the prosecution and persecution of every man whom a vicious system of Government espionage could detect in any technical violation of the law.

Advantage was taken of the fact that the coal land law was not designed for Alaska and the ablest lawyers could not so direct a claimant as to meet the technical requirements. *Notwithstanding this the United States Government actually did receive over \$350,000 from applicants for coal lands in Alaska*, more than six years ago, refused to grant patents to the land and still keeps the money. More than that a committee of the House of Representatives of the United States deliberately and with malice aforethought (See Hearing Committee on the Public Lands, House of Representatives, Feb. 17, 1914) devised a clause in the Alaskan coal leasing bill intended to destroy all rights these claimants purchased with \$350,000 from the Government and which actually does destroy every possible hope of the claimants to have a hearing in court. A Senate committee approved this scheme, the Sixty-third Congress enacted it into a law and the President of the United States gave it his approval, *and the Government still keeps the purchase money.*

Let us hope that some future Congress actuated by motives of justice rather than political expediency will at least order a return of the money as a palliation for an injustice which never can be righted.

These were the conditions which destroyed the railroad enterprise. The refusal of the Fisher administration of the

Interior Department to grant an extension of the right of way because work which the Government policy had prevented had not been done, is but an incident. These are the causes which literally force the owners of the Alaska Northern Railway to sell it to the Government at less than 25 per cent. of its cost and which have robbed them of the opportunity to make their investment profitable.

The Government is not and should not be responsible for the success of any business enterprise, but when, with no great principle involved, it destroys by government edict the conditions upon which a business enterprise is predicated it commits a crime for which adequate justice never can be done.

GLORY ENOUGH FOR ALL

IN LAYLAND RESCUE

In another column we print in full a communication from Earl Henry, chief mining inspector of West Virginia, taking sharp issue with the MINING CONGRESS JOURNAL for its account of the safety work at the recent mine disaster at Layland, W. Va. We regret very greatly that any controversy has arisen as to who is entitled to credit for the heroic work which resulted in the saving of forty-seven lives. There should be glory enough for even the most unimportant assistant. The writer is proud of the fact that he is one of a large number who are striving to lessen the loss of life in mining operations.

All of these are justified in a feeling of satisfaction that so much of progress has been made.

We are unable to discover, however, that the article on this subject in the March issue of the JOURNAL justifies the conclusions or the protest of Mr. Henry. Its heading was "Rescue System Makes Possible the Saving of Many Lives at Layland. Bureau of Mines and West Virginia Mining Inspectors Show Effectiveness of their Plan. Inspectors Systematize Work."

From the body of the article we quote: "Prompt arrival of the State mining inspectors led to an early systematizing of the work of rescue. There was co-

operation on the part of all concerned. *All were placed under the orders of the State Inspector and entered the mine for exploration work."*

The MINING CONGRESS JOURNAL believes its account of the disaster was fair, but gladly gives space to the criticism in order that there may be no question of its desire to present all sides of any pertinent question.

WEST VIRGINIA AND MINE SAFETY WORK

It is to be understood that West Virginia does not want outside assistance in handling her mine safety problems. The Federal Bureau of Mines was never intended to do more than show the way—to investigate and demonstrate and then withdraw, leaving to the State government the permanent handling of its safety work. It will be a welcome condition to find one State ready to meet this responsibility so soon.

The Federal Government should never be permitted to do any work within a State which the State can do as well for itself. Work of a general character, the solution of problems of a general nature, should be done by the Federal Government rather than that forty-eight States should each undertake an investigation which the Federal Bureau might do once for the benefit of all. The putting into effect of the work shown to be advisable by such investigation should in every instance be undertaken by the States unless the work is such as to make it excessively expensive by comparison with the cost to the Federal Government.

The doctrine that the Federal Government should assume every responsibility which the States should but fail to undertake is a dangerous doctrine. Its ultimate result will be the destruction of State authority and the breaking down of the Government as framed by the makers of the Federal Constitution. The principle of home rule is vitally important. If West Virginia has progressed so far that she does not need the aid of the Bureau of Mines other States having had the same opportunity should soon be ready to assume their responsibility.

There is much, so much, work which cannot be done independently by the several States without costly duplication that the Bureau of Mines should gladly lay aside all work which can or ought to be assumed by the several States.

STATISTICS ON COAL MINE FATALITIES OUT TOO LATE

Statistics covering fatalities in coal mines were made public April 5 by the Bureau of Mines. The fact that it requires over three months to get these figures ready indicates that considerable room for improvement exists.

Statistics, generally, would be very much more valuable if they could be available earlier. Publishers of newspapers and trade publications are not getting out histories. Long experience has proven that interest depends, to a great extent, on the timeliness of the matter published.

At the time the fatalities of 1914 were given out, the public was far more interested in the fatalities during the first three months of 1915.

There are obstacles to be considered in getting out statistics quickly after the close of the period they are to cover, but these difficulties are not insurmountable. The Agricultural Department has found a way, whereby many of its figures become available while they are still news. The Interstate Commerce Commission, and other divisions of Government work, get out figures promptly. Why cannot the same results be obtained by the Bureau of Mines?

INVESTMENTS HAZARDOUS SOUTH OF RIO GRANDE

Recent events in Mexico have accentuated the hazardous nature of investments made south of the Rio Grande. It always has been a matter of wonder why so many Americans invested their money in Latin American mines when there are such vast undeveloped mineralized areas of great promise at home.

The risk is greater, even if the governments in Latin American countries were stable. Mexico five years ago was considered the most stable of all those coun-

ties. What has happened there during the last four years may happen in any one of the Iberian Republics. In Mexico, alone, a billion dollars of American money has been invested. A large percentage of this has been swept away in the flood of revolution, which has engulfed the country.

Much of Mexico's mining has been carried on with American money. Profits from these investments have not been satisfactory in the great majority of instances. The values are there, but political instability, difficulties of transportation, high smelting charges, extortion, private and public; danger of litigation and chances of unfair treatment by courts are a few of the drawbacks to investments in Mexico. These disadvantages will be met in most of the Latin American countries.

American brains, American money and American energy should be concentrated on the development of our own mineral resources. The opportunities of profits are better and the chances of failure to receive fair treatment are few.

MINING CONGRESS JOURNAL NOT RIVAL OF TRADE PAPERS

The MINING CONGRESS JOURNAL aims to fill a field not occupied by the mining trade press. It hopes to be an aid rather than a competitor of other mining journals. The technical and practical sides of mining will receive but scant attention in its columns, but as time goes on, it will attempt to cover fully a field to which the regular mining publications give but little attention, viz, the field of mining politics and mining economics. We hope to keep our readers advised concerning all legislation of a general character, which affects the mining industry; to carry to them advanced news of judicial and administrative rulings of importance, and to discuss the underlying principles of the mining industry. Having presented this information to our readers, it is our aim to give through the JOURNAL a popular treatment of general mining subjects, with a view to creating a more friendly attitude, on the part of the

general public, toward the mining business.

At the National Capitol the mining industry has received but scant consideration, and every appropriation made for its benefit has been the result of long continued effort. Chairman Fitzgerald, of the Ways and Means Committee of the House of Representatives, pointed out in a recent speech before Congress that agriculture, during the last session of Congress, had received over \$1,000,000 in appropriations, more than was asked for in the budget of the Agricultural Department. Mining is an important industry—almost as important as agriculture. Agriculture receives about \$20,000,000 annually, mostly for the encouragement of production, while the mining industry, in the whole history of the Government, has received less—very much less—than was given to the agricultural industry last year in excess of the official estimates.

The mining trade journals are intended for those directly interested in the mining industry. The MINING CONGRESS JOURNAL will hope to interest those whose interest in mining is indirect, and it will hope to demonstrate that even the agriculturist has a very important, although indirect, interest in mining, because of the use of minerals which is a necessity in the modern day methods of agriculture, and because of the further fact that the basis of credit and the means of all commercial transactions through which markets are provided rest upon the success of one great branch of mining—the mining of precious metals.

The MINING CONGRESS JOURNAL has a big field of operation, in which, instead of being a rival to mining trade journals, it hopes to be of great assistance in extending the field in which mining trade journals legitimately can hope for patronage.

COOPERATION

For years the Mining Congress has been working diligently to convince mine operators that concentrated effort is necessary to their best interests. An increasing number of operators realize this

fact as is indicated by the membership list of the Congress. If by any turn of good fortune the bulk of those still outside of the Mining Congress could be induced to join hands in this movement, results which would be truly surprising could be looked for.

There are few industries in the country which have had to shoulder so much adverse legislation as the coal mining interests. The high rate of insolvency among coal mining companies is attributed largely to this cause.

The mine owners themselves are largely responsible for much of the adverse legislation which has been enacted. Efforts in the past have not been systematic. It is necessary to do educational work of a public nature and there is no excuse for failing to get the absolute facts before the committees considering bills in State Legislatures.

As the American Mining Congress is a national organization, possessing all the necessary machinery for meeting this situation, it has been suggested that arrangements be made for carrying out this campaign through the established organization. The same results could not be obtained except by an expenditure of much greater effort through a separate organization. There are so many problems which are common to the metal and coal mining industries that the maintenance of separate organizations would not be justified and is not likely to appeal to those who study the question from a business point of view. If the gold and silver, coal, iron, copper, zinc, lead and aluminum operators all should form separate organizations it can be seen that there would be great duplication of work. There are some questions which are peculiar to each industry, but an analysis of the problems confronting mining in general will show that a high percentage of the problems are common to all branches of the industry.

Every effort has been made by the American Mining Congress to extend its membership. While the returns have been gratifying, there are still a very large number of operators who have not joined. It is believed that a review of the accomplishments of the American

Mining Congress will convince any fair-minded man that noteworthy results have been achieved. If the membership could be extended so as to include all operators of mines and oil properties, its capacity for accomplishment would be increased tremendously.

CARRANZA DOUBLES TAX ON MINING PROPERTIES

By more than doubling the tax on mining properties in Mexico, Venustiano Carranza, first chief of the Constitutionalist party, struck a doughty blow in favor of the mining industry in the United States.

Since the promulgation of the decree, a translation of which we publish in our news columns, the State Department has been flooded with requests by Americans having holdings in central or southern Mexico. The State Department has advised owners to pay the taxes as requested. Some holders of Mexican mining property are of the opinion that their properties are safe if they continue to pay the tax which has been in force for many years. They challenge the authority of Carranza to make a ruling of this kind without legislation. Conservative council, however, suggests that litigation is very likely to follow such a course, and that the safest procedure is to pay the full amount demanded by the revolutionary leader.

Mr. Carranza niftily avoids losses that would result from the depreciation of Mexican currency by specifying that mining taxes are payable only in Mexican gold or American currency at the rate of two for one. It may be remarked in passing that Mexican gold is just about as plentiful at present as proverbial hen's teeth.

There are many investors in Mexican mining properties who have grown sadder but wiser. The numbers who have been caused to regret and incidentally to acquire wisdom have been increased greatly by Mr. Carranza's decree. It is to be hoped that American investors will let this be a lesson and make their investments within the borders of their own country.

BASIS FOR OPTIMISM

Increasing prosperity in the mining industry is in evidence throughout the country. An analysis of publications from mining districts shows an abundance of news articles based on actual accomplishments. While there is a tendency on the part of the daily and weekly press in mining sections to be optimistic, whether there is foundation for it or not, the average "boost" story, which has little in fact to sustain it, fails to be convincing. This is equally true, whether read in a distant city or in the camp which is the basis of the article.

The increased activity already is being reflected in shipments. Perhaps the most notable improvement has taken place in the iron and copper districts of the Lake Superior region. The lead and zinc operators of Joplin and other Missouri districts are taking full advantage of the high price being paid for their product. Colorado is showing more vigor in her mining returns than has been the case in many months. A special activity is reported from the Couer d'Alenes district, where the lead, silver, zinc and copper mines are the scenes of greatly increased production. Recent strikes in Cripple Creek have stimulated work there. California is taking old-time strides toward higher production figures. Some notable work is being done in Arizona.

On the whole the industry is taking on a roseate glint that would have been believed impossible a few months ago.

A POSSIBLE DANGER

Only a possibility, yet a possibility nevertheless, is that Germany, shut off by the war from its copper supply, which has come very largely from this country, may, through necessity, learn how to dispense with its use, or, at least, do so in a large degree. Doubtless German metallurgists and chemists are and have been at work seeking to devise a substitute or some means by which but a small part of what has heretofore been deemed necessary will suffice. Copper has been selling at thirty-five cents a pound in Germany and the price is steadily mount-

ing. This is indicative of not only the great scarcity there of the metal, but of the equally great need of it. It is inconceivable that the proverbially painstaking German mind would not take up the problem and earnestly seek for a solution.

It is not unlikely also that patient research is now dealing with the matter of making cheaper the working of whatever copper ores are to be found in Germany. Up to the beginning of the war, the opening of copper mines in that country offered no attraction in a financial way, as they could not be operated at a profit in competition with the copper mines of America.

It is not beyond the realm of possibility that as a result of the war our copper exports may show a decrease, or, at best, fail to continue in that steady increase which has so distinguished the sale of the red metal for many years. Germany has heretofore been our heaviest consumer of copper.

ARIZONA'S CHAPTER CAN ACCOMPLISH MUCH GOOD

The Arizona Chapter of the American Mining Congress, the latest organization created for the purpose of promoting the best interests of the State, cannot be estimated too highly. The exceptionally high standing of its promoters in the mining field guarantees beyond question the growth of the Chapter, and the objects as set forth bodes nothing but good for the industry. True, in most everything, the future can best be judged by the past, and in no one thing does this apply with a surer certainty than the industry of mining. For instance, without dealing explicitly with specific reference to spurious operators in this State in the past they are known by the Chapter, therefore little trouble will be experienced in making ample protection through needful legislation that will prevent repetition in the future.

Mining is the chief industry of Arizona, and for many years to come will continue so, therefore, anything to promote its activity directly uplifts every other industry in the State. The most

bounteous crops may be produced year after year; stock may fatten and sell at enormous prices; still general prosperity need not, nor will it very likely result. But, introduce general activity in the mining field, and then it is that you will see the farmer smile, and workmen and shopmen of every class become prosperous and happy.

Therefore, to read the objects of the Chapter one is forced to the conclusion that it is interested equally in every industry in the State. Such procedure is very laudable indeed, but a most important fact must not be lost sight of, which is, that farming, stock growing and rail-roading cannot be as prosperous without mining as they will be with it.

The organization to be of permanent benefit must be honest. The buyer of mining stock is the man to be protected. It is he that starts and keeps the hoists going, and any legislation tending to safeguard the purchaser of mining stock forges the strongest link in a chain of eventualities that always accompanies mining. Years ago a bill was introduced in the legislature by Hon. A. J. Doran which was intended to correct the activity of the "wildcat" and give the investor a fair run for his money. The bill failed to pass, and strange as it may seem, mining development has yearly grown less ever since.

The panic of 1907 put a further brake upon development of mining in Arizona. Now more than seven years have passed which is ample time for the development of new capital which stands ready to enter the field regardless of the skill of unprincipled operators of the past. That these same "fakers" will be on the ground in the advance of returning activity need never be doubted. Therefore to checkmate their activity in the beginning should be the endeavor of the Arizona Chapter of the American Mining Congress.

The United States is now producing more than two-thirds of the world's petroleum. There is likelihood that the proportion will be increased. The country's oil production is valued at one-third the value of all the metals mined.

TO EXTINGUISH MINE FIRE WHICH HAS RAGED FOR YEARS

**Bureau of Mines Expert Certain Panther
Creek Valley Fire Can Be
Controlled**

**State Legislature and City Expected to Fur-
nish Money for the Work**

It will be possible to extinguish the fire which has been burning for sixty-two years in the mine of the Lehigh Coal and Navigation Company, in the Panther Creek Valley, of Pennsylvania. This conclusion has been reached by Charles Enzian, an engineer of the Bureau of Mines, who was sent to Panther Creek to make an exhaustive inspection of conditions.

He reports a serious state of affairs. Several families have been forced to leave their homes, owing to the fumes coming from cracks in the earth. The area of the fire has spread considerably in the last year.

The unusual progress of the fire during recent months was caused by an opening for a mine which cut two of the seams which are burning. This allowed an inlet of air. During the last two months the fire has made unusual headway. All possible inlets of air have been sealed, and the fire is much less intense at present, Mr. Enzian reports.

As the Bureau of Mines has no money to devote to the work of extinguishing this fire, an appeal has been made to the State Legislature and the mayor of the city. It is expected that they will provide funds to put out the fire.

Mr. Enzian is confident that the fire can be extinguished, and states that it is only a matter of cost.

Bureau of Mines Has Ball Team

Employees of the Bureau of Mines have organized a baseball club, which will compete with the Interior Department League during the summer. The Bureau also is taking an active part in the organization of a target association, which will be organized under the National Rifle Association of America.

ERA OF RAPID DEVELOPMENT EXPECTED ALONG RAILROAD

(Continued from Page 183)

gist. In addition there will be thirty or forty camp men, packers, cooks and canoe men. Work will be continued in the North until the end of September.

The Geological Survey has done a great deal of work in the region to be traversed by the railroad and the territory tributary to it. The work which has been done is described in a number of bulletins, among which are: Bulletin 500, "Geology and the Coal Fields of the Lower Matanuska Valley." It is by G. C. Martin and F. J. Katz; Bulletin No. 295, "The Yukon-Tanana Region, Alaska;" Bulletin No. 251, "The Gold Placers of the Fortymile, Birch Creek, and Fairbanks Regions, Alaska." (Lewis M. Prindle is the author of the last two publications). Bulletin No. 247, "Fairhaven Gold Placers, Seward Peninsula, Alaska," by Fred H. Moffit; Bulletin No. 375, "The Forty-mile Quadrangle Yukon-Tanana Region of Alaska," by L. M. Brindle; Bulletin No. 327, "Geologic Reconnaissance in the Matanuska and

Talkeetna Basin, Alaska," by Sidney Paige and Adolph Knope. In addition to these bulletins much information, concerning the region tributary to the railroad, will be found in Bulletin 480 and Bulletin 592. Each is by Alfred H. Brooks, the head of the Alaskan mineral resources division of the Survey, and his assistants. Each bulletin is entitled "Mineral Resources of Alaska." One is the report made in 1910 and the other was made in 1913. A number of other publications of the Survey touch on matters of interest on the Seward peninsula.

NEW WORK TO BE DONE

While a great deal of detailed work has been done in this region by the Survey, there is room for much more extensive investigations, which will be undertaken at once, now that the route of the railroad has been determined.

The first detailed base map of the Matanuska coal fields was prepared in 1909. This was followed in 1910 by additional geologic investigations. Speaking of the Matanuska fields, the report to the Survey states that the work done has justified fully its cost if only from the fact



TYPICAL ALASKAN COAST COUNTRY

This portion of the Silver Bow basin is to receive attention by the Government's Geologists this summer



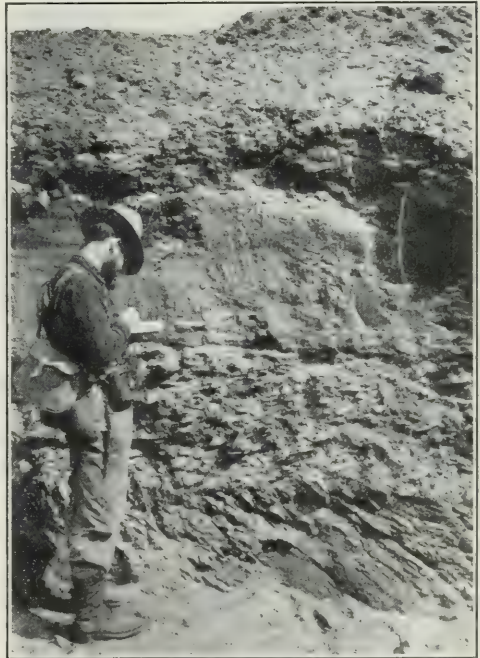
VIEW OF JUNEAU, ALASKA'S CAPITAL

that it has revealed a much larger area of supposed coal bearing formations than was known previously. Previous to this survey the area underlain by the supposed coal bearing rocks was estimated at about fifty square miles. Now it is estimated to be at least seventy-four and possibly ninety-eight square miles. It has been determined that all this area contains workable coal beds, but the survey indicated, at least, that the coal reserves of this field may be twice as large as previously estimated. In this connection it should be noted that coal is known to occur in each of the fields discussed, and the coal bearing area may be considerably larger than is included in the figures given by the Survey.

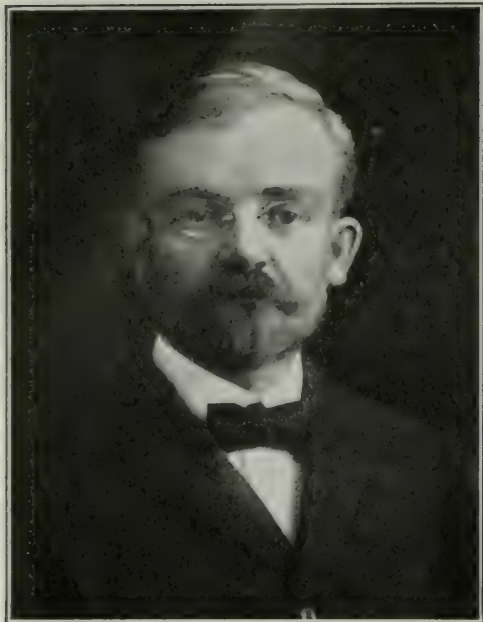
MENDENHALL'S TRIP

The Matanuska valley was traversed in 1898 by W. C. Mendenhall who was attached as geologist to military expedition No. 3, in charge of Captain Edwin F. Glenn, 25th Infantry, United States Army. Mendenhall's exploration covered areas on the west shore of Prince William's Sound and a route extending from Resurrection Bay to the head of Turnagainarm.

True to its custom, the Survey does not indulge in predictions as to the pos-



GEOLOGIST TAKING NOTES CONCERNING
AN ALASKAN DEPOSIT OF GOLD-
BEARING GRAVEL



ALFRED H. BROOKS
In charge of the U. S. Geological Survey's Alaskan Expedition

sible future of the field. Investigations have shown, however, that the coal covers a considerable area. Many sections were taken, but as no drilling or underground work had been done, the reports of the Survey are confined to superficial observations.

The coal of the Matanuska valley is of three kinds, anthracite, high-grade bituminous and low-grade bituminous. Much of the high-grade coal will be used in the manufacture of coke, it is predicted. This coal possesses excellent coking qualities. The low-grade bituminous coal probably can be mined and shipped more cheaply than the high-grade bituminous, it is said. The two kinds of coal will be non-competitive to a certain extent, as each will have its own special market, according to the report of the geologists.

NAME DISADVANTAGES

Some of the disadvantages that are certain to be met with in mining coal in the Matanuska valley are brought out by the Survey. The veins dip at a very sharp angle. It will be necessary to work them with shafts or slopes. Little of the

coal lies above the general drainage level. It will be necessary from the very start to pump water. Gas is likely to be a serious problem in mining in this region.



GEOLOGICAL FIELD PARTY ASCENDING AN ALASKAN RIVER IN THE SPRING

Indications point to the fact that there will be danger from explosive gases almost from the surface.

Pacific Coast Coal Decreases.

One of the effects of the great oil production in California has been to considerably reduce in recent years the coal output of Washington, which is the only coal producing state of any importance on the Pacific coast. The consumption of California oil for fuel in California, Oregon and Washington is estimated to be equivalent to 20,000,000 tons of coal or about six times the coal yield of the three states in 1914. The coal production of these states for 1913 was 3,877,891 short tons and it is estimated that the 1914 output was between 20 and 30 per cent under that figure.

A Chinese mining and smelting company has opened an office in New York for the sale of antimony in the United States. Through government officials in Washington it has already been put in touch with a concern here which has purchased over \$40,000 worth of its antimony.

During 1914 the United States exported gold to the amount of \$222,616,156, as against \$91,798,610 in 1913. Silver exported in 1914 totaled \$51,603,438, and in 1913 \$62,776,631.

VIOLATION OF LAW CAUSES MANY ACCIDENTS IN MINES

**Safety Devices Unavailing So Long As Foolhardy Miners Are Not Restricted;
Education Needed**

That the violation of the mining laws of the State by both workmen and mine officials is responsible for many accidents and deaths in the coal mines, is an opinion expressed by Earl A. Henry, chief of the Department of Mines of West Virginia. "For instance," said Mr. Henry, "when shooting from the solid is allowed in a mine, without a special permit from the district mine inspector, there is a violation of the law on the part of the manager on down to the man who places the shot, and the unlawful and dangerous practice is too common in this State."

Mr. Henry also expresses the view that all the safety devices ever invented will not prevent accidents unless the elements of danger are removed from the path of the ignorant and inexperienced class of workmen. "It is impossible to watch them all," he says, "and the only way to throw protection around them is to remove the danger as far as possible. When an overcharged shot is fired by a man who does not realize just what he is doing, and a dust explosion is the result, the fact that the dust was allowed to accumulate without sufficient sprinkling was an element of danger left in his path. An experienced miner will avoid dangers that the inexperienced one apparently recklessly will seek, when in reality his lack of education of proper mining precautions is the cause. He will not heed danger signals, and especially in gaseous mines he is placing many lives in danger, in addition to his own."

"In the old days, when coal miners were raised in the mines, accidents of any magnitude were rare, but the increased demand for the output has called for more men, with the result that a floating class constitutes a large percentage of the workmen in a majority of the coal mines of the country, and there is always danger from this inexperienced

class. Hence the necessity for a more closely defined method of throwing protection around them and keeping them out of the way of danger.

"A child is taught to dread the fire, and a kettle of boiling water would not be left in his path, and the same lesson applies to the green men who go to work in the mines. It is a naturally hazardous occupation at its best, and they must be taught its dangers, and as far as possible keep the dangers out of their way.

"The coal mines of West Virginia are as well equipped with safety devices as any mines in the world, and if the expenditure of money would prevent accidents there would never be a fatality in the coal mines of the State, for the operating companies are anxious to have them reduced to a minimum, and in addition to all necessary expenditures along this line are encouraging every move for the better education of their employees for their own protection. But the time is ripe for strict attention by mine officials to the small details that cause accidents through the hands of inexperienced men, and as far as possible keep danger out of their path."

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

Complying with the postal law of August 24, 1912, THE MINING CONGRESS JOURNAL submits the following information to its readers: THE JOURNAL is published monthly at 526 Munsey Building, Washington, D. C. Editor, J. F. Callbreath; Business Manager, J. F. Callbreath, Publisher, The American Mining Congress; Owners, The American Mining Congress, a corporation not for profit—Carl Scholz, Chicago, Ill., president; Harry L. Day, Wallace, Idaho, first vice-president; M. S. Kemmer, New York City, second vice-president; George H. Dern, Salt Lake City, Utah, third vice-president; J. F. Callbreath, secretary. There is no outstanding bond issue or mortgage of any kind on the publication. (Signed) J. F. Callbreath, Editor. Sworn to and subscribed before me this sixth day of April, 1915. Thomas C. Willis, Notary Public.

Colliery Sold

Capitalists from Pittsburgh and Scranton, Pa., have purchased the Whippoorwill Colliery at Broad Mountain, near Shenandoah, Pa.

RECENT LEGAL DECISIONS; RULING HANDED DOWN IN TUNNEL DUMP CASE

Federal Decision Rendered in Case where Matter of Disposal of Débris was in Dispute—Matured Provisions of Sale Contract Cannot Be Enforced Under Certain Condition—Income Tax Question

The fact that a tunnel's mouth was located at an elevation of about 10,000 feet above sea level, upon a steep mountain slope, not adapted to many uses, and where the owner of the surface as the grantor of the tunnel had long used the surface as a place of deposit for similar refuse brought from his own mines and from his portion of the tunnel, raises the question of the reasonable necessity of the right of the tunnel grantee to deposit the refuse on the surface of the tunnel grantor, as well as the extent and mode of use of the surface by the grantor, and these questions should be determined by a jury in a controversy as to the right of the tunnel grantee to deposit the refuse on the surface.—*Himrod v. Fort Pitt Mining & Milling Co.*, 170 Federal 29.

MINE LEASE; RIGHT AFTER FORFEITURE

A vendor in an executory sale contract cannot after exercising his contractual right of forfeiture for the vendee's non-performance, rescind the contract and at the same time enforce its matured provisions; and he cannot, whether the property is real estate or personal, after forfeiting the contract and taking back possession because of the vendee's failure to make a payment when due, maintain an action to recover such payment; and this rule applies to a mining lease.—*Young's Mining Co. v. Courtney*, 219 Federal 888.

MINE LEASE; ARBITRARY FORFEITURE

A lease of mine supposed to contain iron ore for a period of thirty years, upon a royalty of 16 cents per ton with a stated minimum royalty payable quarterly each year and providing that if in any year the minimum payment made by the lessee was more than the agreed royalty

for the actual tonnage of such year, and if in any one or more years more iron ore was thus paid for than was actually mined and removed, then the ore so paid for and not removed could be removed in any subsequent year without payment therefor, may be forfeited on a subsequent default in the payment of a quarterly payment; and on the lessor's declaration and notice of forfeiture a Court of Equity will not under such circumstances give the lessor equitable relief in the way of a lien on the lessee's personal property in aid of the lessor's arbitrary forfeiture of the lease.—*Young's Mining Co. v. Courtney*, 219 Federal 868.

CORPORATION TAX

A corporation that is not engaged in mining or trading or other like business but which made mining leases of its lands, valuable for ore, by which it granted the absolute right to dig and remove the ore in terms ranging from twenty-five to fifty years, the lessee covenanting to pay yearly fixed amounts of so much per ton for the ore extracted and minimum amounts to be credited on ore subsequently extracted, the corporation confining its operations to collecting the claims against the lessee's protecting and preserving the property, converting it into money, and distributing the proceeds among its stockholders, is not subject to the internal revenue corporation tax, as such sums so received are not "income" within the meaning of that word in the Corporation Tax Act, but must be regarded as parts of the property or capital of the corporation in a different form.—*Von Vaumbach v. Sargent Land Co.*, 219 Federal 31.

MINE LEASE—SALE OF ORE

A mining lease by which the lessee is granted the absolute and exclusive

right to mine, extract and remove the ore in the land described during the term of the lease, where the term is practically equivalent to an unlimited term is, in fact, a sale of the ore and the royalties reserve in such a lease are, in fact, the purchase price of the ore.—*Von Vaumbach v. Sargent Land Co.*, 219 Federal 31.

MINERAL LANDS; POSSESSION

The possession of the surface owner of mineral lands is not adverse to the title of the owner of the coal and minerals, but such surface possession immures to the benefit of the owner of the underground materials—*Shrewsbury v. Pocahontas Coal & Coke Co.*, 219 Federal 142.

MINERAL LANDS; OWNERSHIP

The general presumption is that the person who has possession of the surface of land has possession of all below the surface also; but when a separation has been made by conveyance or reservation of the ownership of the surface from that of the underground minerals, the owner of the surface can acquire no title to the minerals by his exclusive and continued possession of the surface; nor does the owner of the minerals lose his right or his possession thereof by any length of non-usage, but to lose his right to such minerals he must be disseized and there can be no disseizing by any act which does not actually take the materials out of his possession.—*Shrewsbury v. Pocahontas Coal & Coke Co.*, 219 Federal 142.

MINING LEASE; ROYALTIES

The owner of an undivided interest in a mining claim leased his co-owner's interest, the lease providing that the lessee should possess and work the entire claim, including his own interest, under the terms of the lease, and subsequently sublet the property to another, reserving to himself a percentage of the gross output and thereafter conveyed his undivided interest in the property to his wife and thereafter became a bankrupt. In a subsequent controversy between the wife of the bankrupt and the trustee in bankruptcy, the wife could not claim and recover

all the royalties reserved in such sublease.—*Storecker v. Patterson*, 220 Federal 21.

MINERS' LIENS; ENFORCEMENT

The statute of Washington gives a lien to every person performing labor for any person or company on the franchise, earnings and on all the real and personal property of such person or company which is used in the operation of its business, to the extent of the moneys due the laborer from such person or company operating the franchise or business, for labor performed within six months next preceding the filing of a claim for such lien, and under this statute miners employed by a lessee of a coal mine, who held besides his lease a conditional right of purchase, but of which he did not avail himself, cannot enforce their liens against the owner of the mine, the lessor, but their liens can extend only to the lessee's leasehold interest in the mine and to the personal property used by him in its operation; but the miners' liens may be enforced against personal property sold by the lessor to the lessee under a conditional contract of sale, where such contract was not recorded within ten days after the change of possession, as required by statute, and as to the miners the sale must be treated as absolute and the property subject to their lien.—*Cook v. Snyder*, (Washington) 146 Pacific 156.

MINING LEASE; FORFEITURE

A forfeiture and reentry by a lessor under a mining lease between rental periods is a forfeiture of all payments not fully earned.—*Young's Mining Co. v. Courtney*, 219 Federal 868.

TERMINATION OF MINING LEASE

The termination of a mining lease before the expiration of the period by surrender, reentry or eviction, without more, discharges the lessee from liability for all rents that have not accrued and leaves him liable only for rents that are overdue—*Young's Mining Co. v. Courtney*, 219 Federal 868.

MINER'S LIEN—ENFORCING

Prior to the code of 1913, the statute of Arizona gave all miners a lien for

labor upon a mining claim; but by construction the statute did not give a lien to miners for labor unless the labor was performed at the request of the owner of the mine or his agent. But Section 3654, Civil Code, 1913, amended the original statute and gave miners a lien for labor in or upon any mine or mining claim under certain conditions: First, under or by virtue of a contract between the laborer and the owner of the mining claim or his agent; second, under or by virtue of a contract between the laborer and the lessee of the mine, where the terms of the lease from the owner of the mine to the lessee permit the lessee to develop or work the mine; third, under or by virtue of a contract between the laborer and any person or corporation having an option to buy, or contract to purchase the mine from the owner thereof, where such option contract permits the person or corporation to work or develop the mine. But this amendatory act cannot apply to the owner of a mining claim who gave an option contract to sell prior to its passage, as the application of the amended law in such case would burden the owner's contract with a new obligation, though it might apply if the contract of sale had been executed after the passage of the amendatory act.—*Foltz v. Noon* (Arizona), 146 Pacific 510.

RIGHT OF LESSOR TO CANCEL

An oil lease containing a provision to the effect that when the drilling for oil should have been commenced it should be continuously prosecuted, unavoidable accidents excepted, until the well is completed so as to produce oil in paying quantities or until it is reasonably certain that oil will not be found in such well in paying quantities, and containing another provision to the effect that a well producing oil in paying quantities means a well that will produce by natural flow, or by pumping, as much as twenty-five barrels of oil every twenty-four hours for a period of thirty days, may be cancelled by the lessor when the time limited in the contract has expired and the lessee has failed to produce oil in the quantity stipulated, although wells drilled did produce oil in actual paying quantities.—

McLean v. Kishi, (Texas) 173 Southwestern 502.

DEATH OF MINER; LIABILITY

The statute of Kentucky requires a mine operator to furnish caps and props to be used in securing the roof at such places where the miner is required to keep the roof propped, after the props and caps have been selected and marked by the miner; and in an action against a mine operator for the death of a miner, proof of a custom of the mine, to the effect that under such custom it was not the miner's place to select and mark his props but merely to request the foreman to furnish such props, is inadmissible, as a custom or usage contrary to the expressed provisions of a statute is void and where there is conflict between the custom or usage and a statutory regulation the statutory regulation must control, and where a statute speaks on a subject its terms cannot be controlled by custom.—*Palmer v. Empire Coal Co.*, (Kentucky) 172 Southwestern 97.

ROYALTY AS RENT

A deed by a father to his sons for a large tract of land containing valuable coal mines provided among other things that if the grantor's wife survives him she shall receive one-half of all rents from off the place, from all resources whatsoever, gives to the surviving wife a share in the income from the mines while operated on a royalty basis, as well as all other income and proceeds from the farm, regardless of the manner and form of payment or the name by which it might be designated; and especially so where the parties themselves placed this construction upon the deed.—*Saulsberry v. Saulsberry*, (Kentucky) 172 Southwestern 938.

GRANT OF MINING RIGHTS

A grant of a right to bore a tunnel or to sink a shaft for mining purposes may imply the right as a reasonable necessity to use the surface of lands of grantor for the deposit of waste and debris brought from the tunnel or shaft, such necessity to be determined as a question of fact from the circumstances

of the particular case.—Himrod v. Fort Pitt Mining & Milling Co., 220 Federal 80.

MINING OPERATIONS—USE OF SURFACE

There are obvious degrees of necessity for the use of the surface in the conduct of subterranean mining operations, for the absolute necessity of sinking shafts or making other entrances to the minerals, to the practical necessities of business operations, such as the placing of steam engines and machinery at the mouth of an entrance, of constructing ponds of water to supply the engines, of laying and operating rail or tramways to bring in supplies and to carry out the ore, of storage of minerals on the surface pending sales, of assembling houses, stores, and shops for the use of miners, and such uses may be properly implied in the grants if found to be necessary in such mining operations.—Himrod v. Fort Pitt Mining & Milling Co., 220 Federal 80.

DEFINITION OF ROYALTY

Royalty is a certain percentage or proportion, specically stated, or on a graduated scale according to the value of the ore, based on either the net proceeds, smelter or mill returns, or returns evidenced by the certificate of the United States Assay Office, or otherwise as the parties may agree upon; and royalty cannot be distinguished for rent on the ground that rent is the price paid for the use of a thing, while royalty is a part of the thing itself. The terms "rent" and "royalty," as the result of usage and custom, are often used interchangeably.—Saulsberry v. Saulsberry, (Kentucky) 172 Southwestern 932.

To Manufacture New Engine

The Southwark Foundry & Machine Co., of Philadelphia, will manufacture the Harris Valveless Engine in the United States, having secured the exclusive rights. It will be known as the Southwark-Harris Valveless Engine and will be built in sizes from 75-H. P. to 1,000-H. P. Leonard B. Harris, the inventor of the engine, will be retained by the company as consulting engineer.

HOST OF MINING MEN TO ASSEMBLE IN SEPTEMBER

Without question, September will see the assembling of more mining men than ever has been the case before. San Francisco is to be the meeting place during that month of the American Mining Congress, International Engineering Congress, the American Society of Civil Engineers, the American Institute of Mining Engineers, the American Society of Mechanical Engineers and the American Institute of Electrical Engineers.

The eighteenth annual convention of the American Mining Congress will be Monday, Tuesday and Wednesday, September 20, 21 and 22. This will be followed immediately by the joint field meet of the Bureau of Mines and the American Mine Safety Association.

The secretary of the American Mining Congress will arrange hotel accommodations for any mining men who may request him to do so. As it is anticipated that the hotels at San Francisco will be crowded during the time of the mining conventions, inconvenience may be avoided by having reservations made in advance.

Students Teach Foreigners

Students of the Colorado School of Mines are instructing foreign miners in the practical end of the industrial service movement, being adopted at the school. Classes are held twice a week. Elementary English, advanced English and mathematical courses are to be conducted.

Frederick W. Taylor Dies

Frederick W. Taylor, age 57, died in Philadelphia, March 21. Mr. Taylor was known widely as an originator of the modern science of efficiency engineering on which he wrote several books.

United States bidders were unsuccessful in bidding for burnishing coal for the Chilean mines. The price that got the business was \$6.70 per ton delivered at Valparaiso—a price which it is said the United States exporters cannot reach.

PENNSYLVANIA LEGISLATURE STRUGGLES WITH COMPLICATED COMPENSATION LAW

Payment to Alien Widows and Children if Not Residents of United States Not to Exceed Two-Thirds of Amount Provided For Residents—Pending Legislation in Other Commonwealths

PENNSYLVANIA

House Bill No. 929, introduced by W. H. Wilson. The bill defines the liability of an employer to pay damages for injuries received by an employee in the course of employment, establishing an elective schedule of compensation and providing procedure for the determination of liability and compensation thereunder. It is provided that the compensation act shall apply to all accidents occurring within the State irrespective of the place where the contract of hiring was made, renewed or extended, but under no circumstances is to apply where the accident occurred outside of the borders of the Commonwealth.

DEFINES TERMS

The bill goes into detail in defining such terms as employer, employee, contractor and referee. Some of the other provisions of the bill are as follows: That in any legal action brought to recover damages for personal injury it shall not be a defense if the injury was caused by the negligence of a fellow employee; that the employee had assumed the risk or that the injury was caused by the negligence of the employee—unless it be established that the accident was due to the employee's intoxication or by his reckless indifference to danger. The burden of the proof in these cases shall be upon the defendant.

RELEASES INVALID

No agreement or release of damages made before the happening of any accident is to be valid, except in certain cases specified. The receipt of benefits from any association, society or fund shall not bar the recovery of damages by action of law nor the recovery of compensation. No compensation shall be made when the injury or death be intentionally self-inflicted. The burden of proof of such fact is upon the employer. Wherever death is mentioned as a cause for compensation in the bill it is understood to mean only death resulting from injury and its resultant effects and occurring within 300 weeks after the accident.

The term injury is not to include an injury caused by an act of the third person intended to injure the employee because of reasons personal to him and not directed against him as an employee or because of his employment,

but shall include all other injuries sustained while the employee is actually engaged in the furtherance of the business or affairs of the employer whether upon the employer's premises or elsewhere and shall include all injuries caused by the condition of the premises or by the operation of the employer's business or affairs thereon sustained by the employee who, though not so engaged, is injured upon the premises occupied by or under the control of the employer or upon which the employer's business or affairs are being carried on, the employee's presence thereon being required by the nature of his employment.

WRITTEN STATEMENT REQUIRED

In every contract of hiring made after December 31, 1915, and in every contract of hiring renewed or extended by mutual consent, expressed or implied, after that date, it shall be presumed that the parties have accepted the provisions of the act and have agreed to be bound thereby, unless there be at the time of the making renewal or extension of such contract an expressed statement in writing from either party to the other that the provisions of Article 3 of the act (elective compensation) are not intended to apply and unless a true copy of such written statement accompanied by a proof of service thereof upon the other party setting forth under oath or affirmation the time, place and manner of such service to be filed with the bureau within ten days after such service and before any accident has occurred.

SIXTY DAYS' NOTICE REQUIRED

Any agreement between employer and employee for the operation or non-operation of the provisions of Article 3 may be terminated prior to any accident by either party upon sixty days' notice to the other in writing. If a copy of such notice with proof of service be filed in the bureau, every employer liable under the act must insure the payment of compensation in the State Workmen's Insurance Fund, or in any insurance company or mutual association or company authorized to insure such liability in the State, unless such employer shall be exempted by the bureau from such insurance. An employer desiring to be exempt from insuring the whole or any part of his liability shall make application showing his financial ability to pay compensation. If satisfied as to the appli-

cant's financial ability, a written order making the exemption is to be issued. The bureau from time to time may require further statements of the financial ability of such employer.

ALIEN DEPENDENTS

Compensation to alien dependent widows and children not residents of the United States shall be two-thirds of the amount provided in each case for residents and the employer may at any time commute all future installments of compensation payable to alien dependents not residents of the United States. Alien widowers, parents, brothers and sisters not residents of the United States shall not be entitled to any compensation.

At any time after the injuries the employe, if so requested by his employer, must submit himself for examination at some reasonable time and place to a physician or physicians legally authorized to practice under the laws of such place, who shall be selected and paid by the employer. If the employe shall refuse upon the request of the employer to submit to the examination by the physician or physicians selected by the employer, the board may order the employe to submit to an examination at a time and place set by the employer and by the physician or physicians selected and paid by the employer.

EXAMINATION COMPULSORY

The refusal or neglect without reasonable cause of the employe to submit to examination ordered by the board either before or after an agreement or award, shall deprive him of the right to compensation during the continuance of such refusal or neglect, and the period of neglect or refusal shall be deducted from the period during which compensation otherwise would be payable. The employe shall be entitled to have a physician of his own selection to be paid by him, to participate in any examination requested by his employer or ordered by the board. A referee's findings of facts shall be final unless the board shall allow an appeal therefrom as is provided. The board's findings of fact shall in all cases be final. From the referee's decision on any question of law an appeal may be taken to the board and from any decision of the board on a question of law an appeal may be taken to the courts.

AS TO AGREEMENTS

If after any accident the employer and the employe or his dependent concerned in any accident shall fail to agree upon the facts thereof and the compensation due under this act, the employe or his dependent may present a claim for compensation to the board. When presented the board shall assign it promptly to a referee for hearing and determination. Within seven days after a certified copy of the petition has been served upon any adverse party he may file with the referee designated an answer in the form prescribed.

A hearing shall not be less than twelve days nor more than twenty-one days after notice of the filing of the petition. Within seven days after the conclusion of any hearing the referee shall state his findings of fact, his award or disallowance of compensation. Any party in interest may take an appeal to the board within ten days after notice of a referee's award.

REQUEST BY PETITION

Whenever the employer and employe or his dependent shall on or after the fourteenth day after any accident agree on the facts on which a claim for compensation depends, but shall fail to agree on the compensation payable thereunder, they may by request, petition the board to determine the compensation payable. Any appeal from a decision of the board to the Court of Common Pleas and from it to the Supreme Court, shall take precedence over all other civil cases. All hearings before the board or before a referee shall be public. No claim or agreement for legal services in support of any claim for compensation or in preparing any agreement for compensation shall be an enforceable lien against the amount to be paid as compensation or be valid or binding in any other respect, unless it be approved by the board. If any provision of this act shall be held by any court to be unconstitutional such judgment shall not affect any other section or provision. This act shall not apply in the case of an accident occurring prior to the first day of January next succeeding its passage and approval.

ADMINISTRATION

House Bill, No. 930, also by Mr. Wilson, provides for the administration of the workmen's compensation act. It provides for the creating of the bureau of workmen's compensation of the Department of Labor and Industry, for the establishment of workmen's compensation board to have charge of the bureau. The bill also provides for the division of the Commonwealth into the workmen's compensation districts and the appointment of workmen's compensation referees; the defining of powers and duties of the Commissioner of Labor and Industry, the bureau of workmen's compensation, referees and the workmen's compensation board and the factory inspectors of the Department of Labor and Industry.

INSURANCE

House Bill, No. 931, also by Mr. Wilson, provides for the creation and administration of a State fund for the insurance of compensation for injuries to employes of those who subscribe to it.

PREMIUMS AND PENALTIES

House Bill, No. 932, also by Mr. Wilson, regulates policies of insurance against liabilities arising under article 3 of House Bill No. 929, and provides for the regulation of premium rates therefor and provides penalties.

MUTUAL INSURANCE

House Bill, No. 933, also by Mr. Wilson, provides for the incorporation and regulation of employers' mutual liability insurance associations and provides for the licensing of foreign mutual liability insurance companies.

EXEMPTIONS

House Bill, No. 934, also by Mr. Wilson, exempts domestic servants and agricultural workers from the provisions of the act.

AMENDMENT.

House Bill, No. 935, also by Mr. Wilson, proposes an amendment to the Constitution of Pennsylvania to the effect that the General Assembly may enact laws requiring the payment by employers, or employers and employees jointly, of reasonable compensation for injuries to employees arising in the course of their employment and for occupational diseases of employees whether or not such injuries or diseases result in death and regardless of fault of employer or employee and fixing the basis of ascertainment of such compensation and the maximum and minimum limits thereof and providing special or general remedies for the collection thereof, but in no other cases shall the General Assembly limit the amount to be recovered for injuries resulting in death or for injuries to persons or property and in case of death from such injuries the right of action shall survive and the General Assembly shall prescribe for whose benefit such actions shall be prosecuted. No act shall prescribe any limitations of time within which suits may be brought against corporations for injuries to persons or property or for other causes different from those fixed by general laws regulating actions against natural persons and such acts now existing are avoided.

MONTANA

Bill To Provide Geological Survey Fails To Pass

Among the bills brought before the recent session of the Montana Legislature which failed in passage but which will be pushed at the next session were:

House Bill, No. 419, by Mr. Wallin. The bill provides for the creation of a Montana State Geological Survey; for the appointment of a State geologist, and for the issuance of pamphlets on the mineral resources of the State, for the information of the general public and for the appropriation of money necessary for carrying out of the act. Senate Bill, No. 157, by Mr. Hogan and Mr. Eliel (identical with House Bill No. 381) provided for the protection and safety of workmen in all places of employment and for the inspection and

regulation of places of employment in all inherently hazardous works and occupations. It provided also a schedule of compensation for injury or death of workmen and the methods for its payment. The liability of employers who do not elect to pay the compensation is prescribed. An industrial accident board is provided and its powers and duties described. House Bill, No. 420, introduced by Mr. Corr, provided for the payment of wages or salaries to employees within five days after the termination of their services and provided a penalty for the violation thereof.

RAILROAD REVENUES CLIMB

ALMOST TO THE 1914 LEVEL

Expenses are Decreased and Net Revenue Exceeds that of Last Year.

Figures issued by the Interstate Commerce Commission show that during February the average revenue per mile of the railroads of the United States was \$909. This compares with \$924 for the same month of 1914. The expenses per mile were \$690 as compared to \$750 in February, 1914. The net revenue per mile was \$219 in February of this year, and \$174 in the same month of last year. Incomplete figures for March indicate that there has been a continuance in this good showing. The Eastern roads show a decidedly better business in February of this year than in February of last year. In the South there is still a margin in favor of February of last year; the West shows a slight margin in favor of 1915.

Issue Interesting Bulletin.

An interesting bulletin has been issued by the E. J. Longyear Company, of Minneapolis. It is entitled "Modern Prospecting" and contains some interesting information and photographs relating to work with a diamond drill.

Michigan Alumni To Meet

A reunion of the Alumni Association of the Michigan College of Mines is to be held September 20 and 21, at the Panama-Pacific Exposition.

PERSONALS

Dr. George Otis Smith, director of the Geological Survey, has been reelected president of the Washington Y. M. C. A.

I. C. White, geologist of West Virginia, was in Washington the early part of the month attending a session of the Federal trade committee of the Chamber of Commerce of the United States, of which he is a member.

W. H. Cunningham has taken over all interests in the firm of Cunningham and Conner, of Huntington, W. Va.

G. E. Bost, a specialist in crystallizing radium, has been assigned to the Denver laboratory of the Bureau of Mines.

J. H. White, a sanitary engineer of the Bureau of Mines, has been sent to Oklahoma to advise as to the improvement of sanitation in the mines there.

William L. Saunders, president of the Ingersoll-Rand Co., was appointed recently a member of the New Federal Trade Commission Committee of the Chamber of Commerce of the United States.

George Wilmott, of the Wilmott Engineering Co., of Hazelton, Pa., was a recent visitor in Wilkes-Barre, Pa.

William F. Marshall is now representing the Seneca Coal Mining Co., at Buffalo, N. Y., as a traveling sales agent.

George E. Learnard, of the Engineering Combustion Corporation, No. 11 Broadway, New York, was a visitor to Hazelton, Pa., last week on business.

Engineering Index Out

The *Engineer Index* for 1914 came from the presses in March. It is the thirteenth issue of this character. It contains references to all articles of engineering interest appearing in 250 publications. With every entry a brief descriptive note is given, describing the scope and purport of the articles. The *Index* is a guide to the gist of pertinent information of interest to the engineering profession. It is published by the Engineering Magazine Company, of London.

PAPER ON BEST METHODS OF FIRING SOFT COAL POPULAR

If commendation from authorities on the subject count for anything, the Bureau of Mines has a most useful document for distribution in Technical Paper No. 80. It is entitled, "Hand Firing Soft Coal Under Power-Plant Boilers." It is by Henry Kreisinger. General directions on firing soft coal are given. Emphasis is put on the necessity of the proper placing of coal on the fuel bed. Questions as to frequency of firing and the amount of coal to be fired at a time, come in for detailed comment. Great stress is placed on the necessity for preventing clinkering. The work is carefully written, and is the result of investigations extending over a long period of years.

KNEW WHAT TO DO; SAVES HIMSELF AFTER ACCIDENT

Miner, Hurt by Exploding Caps, Puts to Use Knowledge of First-Aid Practice

Presence of mind and a knowledge of first-aid procedure saved the life of a Nevada miner last month, when he was injured by the explosion of a box of caps. He was alone at the time of the accident. Fully 200 pieces of copper were blown into his flesh. The femoral artery was cut. Despite his profuse bleeding, the miner jerked out his shoe-string and used it as a tourniquet. Had he not done this, he would have died within five minutes, the camp physician declares. As it was, he stopped the flow of blood entirely from his most serious wound, crawled 400 feet to a telephone, and summoned help. As a result, he will be able to be at work within three or four weeks from the time of the accident, without visible signs of his misfortune.

Rotating Hammer Drill Patented

A recent patent for self-rotating hammer drills was granted to Louis C. Bayless, of Easton, Pa., who assigned the patent to the Ingersoll-Rand Co.

MINING CONGRESS JOURNAL IS BEING READ CRITICALLY

**Apparent Errors in Figures Bring Several
Communications From
Readers.**

**Comparison of Coal and Gold Mining Statis-
tics Causes Protests From
Metal Men.**

In starting a new publication there are many obstacles to be overcome which are not suspected by persons on the outside. There are mechanical difficulties and difficulties of organization which require some time for their elimination.

At some stage during the making up of one of the issues of the MINING CONGRESS JOURNAL some of the paragraphs which should have come under State headings were separated in the composing room from the articles to which they belonged, and run as "fillers" in other parts of the JOURNAL. Separated as they were from the heading to which they appertained, they appeared to contain information which was highly erroneous. For instance, an item which should have been one of several Arizona notes was run alone. The output of lead for 1914 was given. It was the output of lead in Arizona, but, standing alone, the natural inference is that it was the world's output.

UNFORTUNATE COMPARISON

Another filler, thrown in to fill a hole at the last moment, compares the coal and gold mining industries somewhat at the expense of the latter. It is not the intention of the MINING CONGRESS JOURNAL to boost one kind of mining at the expense of another.

These items have resulted in the receipt of a number of letters calling attention to the items mentioned. They are sources of considerable satisfaction, since it indicates that the JOURNAL is being read and read critically. Letters of this kind aid greatly in the elimination of errors and in bringing the publication to a higher standard.

VAN WAGENEN PROTESTS

One of the letters received, which is typical of others, is from Theodore F.

Van Wagenen, of Denver. Mr. Van Wagenen says:

"What is the name of the high school kid statistician who is running the 'squib' department for you in the JOURNAL? Just listen to this:

The earth's gold production for one year, it is said, would scarcely pay for half the anthracite mined in one modest sized district in Pennsylvania.

Pennsylvania coal mines pay wages to nine men for every one employed in gold and silver mining.

To buy all the gold and silver in this country would take \$1.50 apiece for every man, woman and child in the United States. It would take twice that amount from everybody in the country to merely pay for the coal mined in Pennsylvania during 1914.

"The earth's gold production in 1913 had a value of \$466,136,100.

"Pennsylvania's total production of anthracite in 1912 had a value of \$177,-622,626.

"I am not posted as to labor conditions in Pennsylvania and so have no remarks to make as to paragraph 2.

SEES ANOTHER FLAW

"As to paragraph 3. Assuming the population of the United States to be 100,000,000, the writer intimates that \$150,000,000 would buy all the gold and silver in the country. Well! well, that is news. According to current belief (for which there is good foundation) the United States branch mint at Denver has \$450,000,000 in gold alone in its vaults.

"Again, the production of gold and silver in the United States up to the close of 1913 had been as follows: Gold, \$3,-540,799,400.00; silver, \$1,709,517,600.00; total, \$5,250,317,000.00.

"Now, where does your young man think all that plunder has gone, that he could buy the pitiful remainder for a measley \$150,000,000? Tell him to go back to the sixth grade in the grammar school and study arithmetic.

"It doesn't pay to boost one industry by trying to run down another. I imagine your statistical editor was born and brought up in some coal mining town in Pennsylvania (Scranton or Mauch Chunk) and has never been more than 100 miles out of the State. And that he doesn't know whether California is this

side of Colorado or the other. And if he was directed to go to the Black Hills of South Dakota he would probably take a steamer at New York with a ticket for Timbuctoo in his pocket.

"Here is a choice item:

The output of lead practically equalled that of 1913, which was 16,144,772 pounds. The Bisbee district of Cochise County, especially the Copper Queen and Shattuck, contributed most of this metal. In Mohave County the Tennessee mine was a large producer.

"The United States production of lead in 1913 was 862,860,000 pounds, and I do not think that a pound of it came from the Bisbee district, which is a notable copper producing region. Never heard of the Tennessee Mine in Mohave County.

AS TO ZINC

"And here the young man gives a particularly vicious swipe to the zinc industry when he says, rather vaguely:

The production of zinc ore showed little change from the yield of 1913, when 14,726 tons of concentrates and crude ore produced 9,428,067 pounds of spelter.

"Well, the zinc output of the country in 1913 was only 674,504,000 pounds, so he is a little off. But he may get nearer next time.

SOME SUGGESTIONS

"Allow me to suggest that if you want to interest an old stiff out in the West in the JOURNAL, you must send your ciphering man back to school to be reeducated. In fact, he ought to be entirely 'born' again, so as to take a fresh start. And, if he decides to take this friendly advice, suggest to him the many advantages of coming out here (instead of staying in Pennsylvania) to go through the process. Plenty of good storks out this way."

University Issues Index

A paper by William S. W. Kew on "Tertiary Echnoids From the San Pablo Group of Middle California," has been issued by the University of California. The University, also, has gotten out its 1914 index to its publications on geology.

LITTLE POTASH AVAILABLE

Investigation of Columbus Marsh, Nev., Subject of Report

In searching for a domestic source of potash in the United States, the Geological Survey has explored a number of the desert basins in the West. Among the regions investigated is the mud flat known as Columbus Marsh, which lies midway between Reno and Tonopah, Nev. It has an area of thirty-five square miles.

Nine shallow wells have been sunk in this marsh, and the borings and waters have been examined for potash. While commercial quantities of potash were not found and no saline beds were encountered, the data obtained in the exploration, like much of the Survey work, have a scientific value. A more extensive chemical study has been made of the muds from one of the wells by W. B. Hicks, and the results are given in a recent Survey publication, "The Composition of the Muds of Columbus Marsh," issued as Professional Paper 95 A.

This report shows that the muds contain a high percentage of potassium, only a small part of which, however, is soluble in water. The results of the chemical study indicate further that a large part of the potassium in the muds has been absorbed from solution and is held in a loosely combined form. This condition may account for the apparent disappearance of the potassium from the salines of the desert basin region, and should have a bearing on future exploration for potash.

A copy of the publication, which is quite technical in character, may be obtained free, on application to the director of the Geological Survey, Washington, D. C.

Holmes' Report Being Distributed

There is much of interest to every miner in the annual report of the director of the Bureau of Mines. This report is being distributed at the present time.

SEES NO DISCRIMINATION AGAINST AUSTRIAN SUBJECTS

State Department Receives Complaint With Regard to Pennsylvania Bill

Lower Rate of Compensation for Aliens At- tacked by Ambassador

A provision of the pending workmen's compensation law in Pennsylvania which specifies that non-residents, widows or children of alien workmen shall receive only a portion of the compensation allowed has resulted in a protest to the State Department by the Austro-Hungarian Embassy. It is claimed that the law is discriminatory and will affect adversely Austrian subjects.

State Department officials, however, are inclined to the belief that no discrimination against Austrian subjects exists. The law, if enacted, will apply equally to all foreigners, whatever their nationality. Attention is called to the fact that the legislation is proposed to better the condition of Pennsylvania's laborers and their families and not the citizens of foreign lands residing abroad. The welfare of the descendants of this generation of workmen also is considered in the Pennsylvania law and it is natural that that Commonwealth should not be interested in bettering conditions of future generations in Austria and Hungary or any other foreign country. It allows full compensation for the dependents of foreigners who reside in the United States.

Even considering that alien dependents residing abroad will receive only two-thirds of the amount they would receive if residents of this country, there is a difference in the cost of living which will do much toward making up the difference. Doubtless the framers of the bill has this fact in mind. If the same amount of compensation were to be paid when residing abroad, the additional profit would induce many widows to return to their native lands. It is desired to avoid this, it is pointed out, as one of the greatest arguments in favor of immigration is the fact that the second

and third generations become desirable citizens, whereas the first generation may have been objectionable. It is believed here that Pennsylvania is within all provisions of the Constitution in attempting to pass a law which will result in its own social and economical betterment.

FIRST-AID BOOKLET PROVES POPULAR; 200,000 DISTRIBUTED

Effort Will Be Made To Circulate 1,000,000 Copies of Instructive Work—Elements of Anatomy Clearly Presented

Two hundred thousand copies of "First-Aid Instruction to Miners" have been distributed by the Bureau of Mines. These copies have been given out only on request. This pamphlet is so popular that the bureau expects to distribute fully a million copies.

Attention is called to the fact that to a man, when hurt in a factory or in most other industrial activities, first-aid is a comparatively simple matter. An ambulance is called or a physician can be secured quickly. An accident in a coal mine, however, is an entirely different matter. The injured man is under ground, possibly 2 miles from the mine entrance. It is dark, and dirt is everywhere. First-aid cannot be administered in a haphazard manner. Many a death has resulted in mines due to the ignorance of workers as to proper steps to make at the critical moment.

This publication by the Bureau of Mines goes into anatomy in a simple and easily understandable manner. The circulatory system is explained with considerable detail, and ready methods of stopping loss of blood are explained. Explanations as to first-aid treatment in nearly all possible accidents are given. Among them are treatments for fractures, dislocations, sprains, burns, electric shock, suffocation and asphyxiation. Methods of bandaging all possible injuries are explained. There is a great deal of valuable information in the booklet, which contains sixty-seven pages, and an effort will be made to get it into the hands of every miner in the country.

RIDICULES LEGISLATION AIMED AT MINE OPERATORS

Clever Parody Applies Restrictions to Farmers —Would Protect Hired Man from Horses' Heels

In order to emphasize the ridiculousness of many laws aimed at operators of mines, a parody on such legislation has come from the pen of a West Virginia operator. Limitations, which many would like to see enforced against mine operators, are applied to the farmer. While some exaggerations have been resorted to, in order to bring out the travesty, there is a grim lesson behind the burlesque which should not be missed by legislators who have been active in hamstringing industries.

The parody reads as follows:

A bill to regulate prices, to prevent extortion and to prevent injurious practices by farmers and certain others engaged in agriculture and commerce.

Be it enacted by the legislature of West Virginia:

Section 1. Only one price for a given commodity shall be lawful. A farmer desiring to change a price shall file a schedule thereof with the commissioner hereby created, which shall go into effect thirty days thereafter, unless suspended by the commissioner at the instance of any consumer.

The said commissioner of agriculture shall carry into effect all of the provisions of this act, and he is hereby invested with all necessary powers to that end.

Section 2. No prices shall be increased, however, except upon due proof, the burden of which shall be upon the farmer, that existing prices are confiscatory of his goods and gear. In its discretion the commissioner may refuse to permit any such increase until a valuation by its engineers and accountants shall have been taken. In such valuation the farmer shall have no credit for past profits invested in new fields or improved structures, but shall be allowed only original cost plus borrowed money invested.

Section 3. "Commodity," as used herein, includes all grains, vegetables, live

stock, dairy articles, excepting sand, gravel and manure, and hair.

Section 4. Every hired man shall work eight hours only per day, not including the Sabbath, and shall not recommence work unless he has completed a period of not less than eighteen hours of absolute rest and quiet. He shall not work on the Lord's day nor on legal holidays nor on Jack Love's birthday.

Section 5. Every farmer shall hire one more hired man than his work requires.

Section 6. The only permissible exceptions to the two foregoing sections shall be periods of stress resulting from earthquake, Halley's comet or European invasions.

Section 7. All wagons and all poles and doubletrees shall be provided with couplers, coupling with impact, so that the hired man need not go between the wheels of the wagon and the heels of the horses.

Section 8. All wagons shall be supplied with suitable brakes, grabirons, stirrups and platforms of standard dimensions to be fixed by the commissioner.

Section 9. All bulls, when moving on the highway or in unfenced areas, shall be equipped with a bell of not less than fifty pounds weight, a steam whistle and an electric headlight of at least 1,100 candlepower.

Section 9-a. All rams shall, when moving on a public highway or when having access thereto, be equipped with electric horns and headlights of such loudness and candlepower as may be fixed from time to time by the Commission of Agriculture by his order duly issued; provided, however, that this section shall not be construed to apply to hydraulic rams.

Section 10. Sheds shall be built over all fields where hired men have to work in summer.

Section 11. All fields, engines and machinery shall be fenced in; all belting shall be incased in metal housings; and all grindstones, churns, hay cutters, bull's horns and other moving parts shall be strongly incased in sheaths for the protection of the hired man.

Section 12. All barns, sheds and other outbuildings shall, in cold weather, be adequately heated, and at all times shall be well lighted and policed.

Section 13. The right to mortgage real estate is a franchise reserved to the State. No farmer shall make any mortgage nor incur any indebtedness extending for a period of more than one month without the written approval of the commissioner, obtained upon petition and hearing, and upon paying the State Treasurer 10 cents for each \$100 of indebtedness. Indebtedness incurred without such consent shall be void.

MINE FATALITIES DROP UNDER PREMIUM SYSTEM

United States Coal and Coke Company Makes Good Showing on Clever Plan

A striking reduction in fatalities in the mines of the United States Coal and Coke Company has resulted from a premium system, according to Howard N. Eavenson, of Gary, W. Va., who recently read a paper on this subject before the American Institute of Mining Engineers. The number of tons produced, per fatality, has risen from 107,323 in 1909 to 428,962 at the end of 1914. Mr. Eavenson explains the premium system as follows:

"Early in 1909 the inside organization was increased by adding to the list of officials at each mine assistant mine foremen enough to provide one for each twenty-five men employed. To each assistant was assigned a definite territory, over which he had the same authority that the mine foreman exercised over the entire mine. The average number of men under each assistant foreman is about twenty-two.

"The fundamental idea in appointing these men was to provide enough executive officials at each time to allow each one to stay in any working place where any dangerous condition was found until that condition was removed; and this is the one thing rigidly required of these men.

"In order to stimulate the interest of the assistant foremen in their work and to make the prevention of accidents a personal matter with them, a premium system was started in May, 1910. Under this system an assistant mine foreman having a clear accident record for a month receives a bonus of \$5; should his record be free from accidents for six consecutive months, he receives a special premium of \$10 per month in addition to the \$5 already mentioned; and this bonus of \$15 per month is paid him as long as his record remains clear. Should he have an accident he is charged with demerits for each man who is injured under his charge each month at the rate of ten demerits for each minor, twenty demerits for each serious and forty demerits for each fatal accident. No person having ten or more demerits to his discredit at the end of each month is entitled to any premium, but if he has less than ten demerits he will receive the same premium as before.

"The mine foreman is charged with all the demerits received by the various assistant foreman under him, and is credited with all the merits received by them.

"In the case of mine foremen, the premium for a month's clear accident record is \$10 and the special premium for six continuous months' clear record is \$15. Thus a mine foreman having a clear accident record of longer than six months will receive a bonus of \$25 per month so long as his record remains clear, the assistant foremen under the same conditions receiving \$15 per month. The mine foreman's account is not charged with any demerits of the assistant foremen when these are given for neglect of duty or causes other than accidents. If a foreman or assistant foreman leaves the employ of the company and later reenters it he assumes all demerits standing against him when he left.

"Since the adoption of the premium system in May, 1910," Mr. Eavenson said, "the company has paid 2,652 premiums, amounting to \$19,005, or a cost of .015 cents per ton."

MOVING PICTURES OF MINING SCENES ARE READY FOR USE

**Bureau of Mines Conducting Educational
Work by Showing Special
Films**

**Pictures Will Be Loaned in Communities In-
terested—Subjects Handled
Interestingly**

As a part of its educational work, the Bureau of Mines has acquired a number of moving picture films. They will be displayed throughout the country. Educational features are presented in an attractive manner. One film shows operations at the property of the Oliver Iron Mining Company. It shows stripping, exploration, drilling, tunneling, and logging operations. Another film represents a mine explosion and rescue. "America in the making" shows a European peasant receiving passage money to go to America. On his arrival he is met by his brother and taken to Gary, Ind. He is guided to the Y. M. C. A. instead of to saloons. As he is unfitted for skilled labor, he is given employment as a laborer. His first lesson is one of safety. He is given goggles to protect his eyes from flying chips and is instructed in the use of a safety-hook, a hand protector with a safety spring wristband, guard for a gauge glass, locking switch, and a universal danger sign. Transferred to Ohio, he learns of other safety appliances, among them guards on a drill press, guards on planers, on circular saws, on emery wheels, belts and pulleys. He returns to Gary and goes to work at open-hearth furnaces and converters. A teacher in the night school becomes interested in the workman. They are married, and six years later a happy family is shown.

Another film shows the manufacture of coke in the Marianna Mine, of the Pittsburgh Buffalo Company.

Iron is shown in each step of its progress, from the mine to the molder.

One of the very interesting films is that showing in detail how first-aid should be applied to injured miners. A demonstration of the inflammability of coal dust is shown in another film.

Transporting coal from the face to its final destination, across the seas, is shown.

Many other interesting films, showing anthracite coal mining, field work, blasting, results of explosion tests, marble mining, granite mining, shooting oil wells and sanitary demonstrations, can be obtained by complying with the very lenient regulations which govern the distribution of these films.

It is the intention to have them shown at meetings of miners and mine inspectors, at mining institutes, association meetings and similar gatherings. They will not be loaned, under any circumstances, for exhibit where an entrance fee is charged.

Michigan Issues Reports.

It can be said without fear of contradiction that Michigan is second to no State in setting forth the findings of its Geological and Biological Survey in an attractive manner. Dr. R. C. Allen, the Director, has given proof of his ability in three works just issued by the Survey. One is entitled "Mineral Resources of Michigan;" another "The Appearance of Oil and Gas in Michigan," and the third is the annual report of Dr. Allen. Each volume is bound attractively in cloth. Statistics are presented in an unusually clever manner, while the results obtained during the period under review are set forth in an extremely readable style.

Organize for Safety Work

A safety-first organization has been completed by the Arizona Copper Company. The officers are: Norman Carmichael, president; P. B. Scotland, vice-president; L. M. Banks, secretary, and Joe Kiddle, chairman of the Longfellow branch.

GEOLOGY AND MINERAL RESOURCES TO BE SHOWN

A new base map, showing the geology and mineral resources of Alaska, is practically completed by the Geological Survey. It probably will be ready by June 1.

ENGINEERS FILE PROTEST AGAINST PROPOSED LAW

Say Mining Engineers Would Be Barred From
Foremanships if Pennsylvania
Bill Carries

Mining engineers in Pennsylvania made strenuous objection to the bill presented to the Pennsylvania Legislature, providing drastic regulations under which mine foreman certificates could be issued. Their objection to the proposed changes in the mine law is said to be based entirely upon the fact that it is proposed to limit the granting of mine foreman certificates solely to those who have cut coal or blasted rock at the face for five years. They pointed out that this would debar mining engineers, and also other capable men about the mines. Timber men and track men, for instance, would be disqualified. They also contend that the proportion of uneducated foreigners now engaged at the face would limit greatly the field from which mine foremen could be chosen.

The mining engineers do not intend that technical education alone should entitle a man to a foreman's certificate. They admit a certain amount of practical experience to be necessary, but they argue that education should count in lieu of a certain number of years' experience. This is the case in the best foreign practices.

The engineers object to the limitation of the term "miner" to one who has had five years' actual experience in cutting coal at the face. By restricting the definition of the word in this manner, endless trouble would be created in the interpretation of laws already on the statute books where "miner" is used in a more liberal sense.

Resolutions setting forth these ideas were presented to the Legislature of Pennsylvania recently by the Engineering Society of Northeastern Pennsylvania.

New Breaker in Operation

The new breaker of the Scranton Anthracite Coal Co., near Moosic, is completed and preparing coal for the market.

ACCIDENT RECORD PUBLISHED

Raritan Copper Works Company Gets Out
Interesting Monthly.

An accident record is being featured by the *Ingot*, the monthly publication of the General Safety Committee of the Raritan Copper Works at Perth Amboy, N. J. The accident record gives a concise account of each mishap to employees of the company since the last issue. It gives the time lost by the employee in each case. The *Ingot* is published on high-class paper and carries a number of half tones. One of these pictures in the last issue shows a brakeman using a club to apply a box car brake. He is standing in such a position that the slipping of the club would mean a fall to the track beneath. A second cut shows how the brakeman should have performed his task. He is shown sitting on the roof of the car, using the club in such a manner that he would be safe, even if the club should slip.

Develops Toolometer

The New Jersey Meter Company, of Plainfield, N. J., announces the presentation of the toolometer, which is an air meter. It is claimed that it is the only type of compressed air meter which shows, direct on a scale, in cubic feet of free air per minute, the flow of air in a pipe or hose.

Arizona Has Extra Session

Due to the failure of the Legislature of Arizona to reach numerous important bills, Governor W. P. Hunt called a special session which convened April 23. A general appropriation bill is to be considered as well as legislation fixing the rate of taxes.

Directors Retire

Quincy A. Shaw and Thomas M. Perkins retired from the directorate of the Osceola Mining Company at the annual meeting in Boston recently. R. L. Agassiz was reelected president.

NEARING NORMAL

Coal Shipments on C. & O. Show Increase; N. & W. Forwardings Still Under 1914

The shipments of coal and coke over the lines of the Chesapeake & Ohio Railway during the month of January have just been made public in the statement issued by O. D. James, auditor of freight traffic for the Chesapeake & Ohio. It shows that 1,702,047 tons were shipped during the month of January, as compared with 1,679,451 tons during the same month in 1914, an increase of 22,596 tons.

The statement of the shipments of coal and coke over the lines of the Norfolk & Western Railway for the month of February and the two months of the current year, has just been made public by T. D. Hobart, general coal freight agent. The statement shows 1,689,606 tons shipped during the month, as against 1,762,344 tons during the same month last year, a decrease of 72,738 tons. For the two months of the year 3,646,759 tons were shipped over the lines, as compared with 3,846,903 tons during the same period in 1914, a decrease of 200,144 tons.

WRITES A "COAL CATECHISM"

William Jasper Nicolls Has New Book Just Off Presses

There is something decidedly novel in "Coal Catechism," a recent book by William Jasper Nicolls. Mr. Nicolls is already known to mining engineers as the author of the story "The Story of American Coals."

"Coal Catechism" starts out in this fashion:

"No. 1. What is coal?

"Fossil fuel; a black earthy substance which is dug from the ground, and which can be burned for fuel.

"No. 2. Of what does coal consist?

"Chemically, it consists of carbon, volatile matter, sulphur and ash, with a small amount of water.

"No. 3. What is carbon?

"Carbon is one of the most common of the elements; a diamond is pure carbon, and a piece of charcoal is carbon united with a small portion of oxygen."

The "Catechism" does not stay in this elementary stage long, however. It gets into the technique of coal mining in a manner which is certain to interest laymen as well as engineers. Further along in his book, Mr. Nicolls answers the question as to the construction of flue ovens as follows:

"The Semet-Solvay flue ovens are constructed in a rectangular form, the retorts being above the foundations of the oven. The ovens are charged at the top by larries, and the coal is burned twenty-four hours or one-half the time required by the common beehive ovens. On each side of the oven are three horizontal flues running the entire length and containing gas, which heats the ovens. The flues are made of tile and are not more than 2 inches thick, so that the head easily can be conveyed through."

Continuing, he describes how the ovens are operated, how the coke is drawn, the cost of operation, the production of illuminating gas, and the saving of the by-products.

The book is attractive in itself, with gilt edges and flexible leather cover. It is published by J. B. Lippincott Company.

PROFILES OF NORTHWESTERN RIVERS ARE MADE PUBLIC

A recent publication by the Geological Survey covers profiles and surveys of the Missouri River, in Montana; Bear River, in Idaho; Hood and Sandy Rivers, in Oklahoma; Wenatchee, Quailmic, Sultan and Skykomish Rivers, in Washington.

YUKON-TANANA REGION REPORT BEING PRINTED

A report on the water resources of the Yukon-Tanana region of Alaska by the Geological Survey is in press. Especial attention is being given to the utilization of this water in mining.

HAVE SAME SCHOOLS

Children of Operators and Miners Well Provided for in West Virginia

By way of illustrating the advantages of West Virginia for miners who want to enter fields where they may bring up families in sober, moral and enlightened communities, a prominent mining man of the Pocahontas field has called attention to the excellent schools in Fayette, Raleigh, Mercer, McDowell and Mingo Counties, as well as other sections. In speaking of the fine new buildings the operator told of the money spent there within the last five years for this purpose.

Several years ago some of the operators and miners noted the absence of substantial schoolhouses, with modern equipment, in the Pocahontas field. Both employers and employees were aroused to the need of such buildings and equipment, and they united in representations to the proper county authorities. It was pointed out that the bulk of the taxes was paid by people connected with the coal industry and those living in the mining camps. County authorities saw the point and took action, and the result of that action is found today in the beautiful brick school buildings in the counties mentioned. These buildings have the latest things in school equipment, and in addition some of the best teachers in the State are to be found there. The educational standard is high, and the children of miners are getting the same schooling as the children of operators, and many are preparing for college side by side.

NEW HOMESTEAD LAW

Kansas Secures the Extension of the Enlarged Homestead Act to Public Lands

One of the last acts of the Sixty-third Congress was the passage of a bill extending the provisions of the Act of February 19, 1909, known as the "enlarged homestead act," to the State of Kansas. The law was approved by the President March 3, 1915. By this act a homestead entry may be made for an area of 320 acres or less of lands designated by the Secretary of the Interior as nonirrigable,

provided that the lands are located in a reasonably compact body not over $1\frac{1}{2}$ miles in extreme length, that they do not contain merchantable timber, and that they are non-mineral, unreserved, unappropriated, and unsurveyed. The determination of the character of the lands as regards irrigability is intrusted by the law to the Secretary of the Interior, and the duty of making the required classification has been delegated by him to the Geological Survey. The law expressly states that before the lands are enterable as enlarged homesteads they must be "designated" by the Secretary of the Interior as meeting the requirements of the statute that the lands shall be non-irrigable. As a prerequisite to designation it must therefore be shown that the lands are not susceptible of successful irrigation at a reasonable cost from any known source of water supply.

The area of unreserved public lands remaining in Kansas is, however, not large, being approximately 102,000 acres, scattered through about twenty-five counties. The largest areas of public land are in Morton, Cheyenne, and Hamilton Counties, along the western border of the State. Even in those counties the amount of public land does not, however, exceed 3 per cent. of the total area. It is also probable that the remaining public lands in the State are of inferior quality for agriculture, as the more attractive lands have in general passed into private ownership.

Canadian railway operators are understood to be financing an expedition to seek for coal in the Hudson Bay district, the desire being to utilize the discovered fuel in connection with the proposed opening of the Hudson Bay Railway. An adequate coal supply for steamers and locomotives is considered essential to a successful carrying out of the Hudson Bay project. To secure a supply at any point accessible for ships plying on the Hudson Bay route would be a great advantage. Without such supply, coal will need to be hauled from western Canada and Cape Breton and stored at terminal points. A schooner is being equipped for use in the quest.

WORK ON NEW MAP**Geological Survey Charting Central Pennsylvania Quadrangle**

A base map, showing the Curwensville Quadrangle in Central Pennsylvania, is being worked on at the Geological Survey. This map is being made in accordance with the new policy of the Survey. It is the intention now to make all reports and maps readily understandable to anyone of ordinary intelligence. The old-time idea of the Survey was to set forth the broad features of geology and let the mining engineer work out the local details. Then it took a school of mines' man to understand many of the publications and maps of the Survey. As the maps and reports are being made up at present, they are readily interpreted by the layman.

Tells of Hawaiian Lavas

A description of the lavas of the Hawaiian Islands is being prepared by the Geological Survey.

**CONGRESS TRIMS APPROPRIATION;
SURVEY WORK IS CURTAILED**

In the trimming of appropriations at the last session of Congress, the money allotted the Geological Survey was reduced by \$50,000. This will reduce the important work considerably.

Interesting Paper Coming Out

An interesting work is about to be published by the Geological Survey. It is entitled "Contributions to Economic Geology." It is composed of short papers and preliminary reports. The authors are F. L. Ransome and Hoyt S. Gale. The work probably will be out May 1.

Patents Safety Attachment

A recent patent was granted to George F. Royer, of Wilkes-Barre, Pa., for a safety attachment for hoisting machines.

Portugal, in 1914, exported to the United States sulphur ore to the value of \$282,477, as against \$333,521 in 1913.

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The American Mining Congress

The American Mining Congress is a voluntary association supported by the dues and fees of its members. It is striving to bring about:

First—Safety and efficiency in mining operations.

Second—Intelligent conservation with a view to the highest development and use of our mineral resources.

Third—The stimulation of investment in practical mining operations by showing that mining is a legitimate business when intelligently conducted.

Fourth—Uniformity in state laws governing mining operations carried on under like conditions.

Fifth—Such federal co-operation through research and investigation as will furnish the basis for intelligent state legislation, and will solve those problems of economical production, treatment and transportation which are essential to an increase in mineral production.

Sixth—The improvement of the economic conditions underlying the coal mining industry.

If you are interested in this work, now is the time to help; do not wait until those who are now carrying the burden have become discouraged.

The appended application blank will show the way. Come in and bring the neighbor who should join this movement. Mail application to

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Munsey Building, Washington, D. C.

THE AMERICAN MINING CONGRESS

APPLICATION FOR MEMBERSHIP

.....191.....

I hereby make application for membership in THE AMERICAN MINING CONGRESS and agree, if accepted, to abide by the By-Laws, Rules and Regulations of said organization and to pay the dues required by same.

Name.....

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THE MINING CONGRESS JOURNAL

JUNE

CONTENTS

1915

OFFICIAL CALL	245
SELBY SMELTER COMMISSION REPORT.	253
EXPLOSION PROOF COAL CUTTING MACHINE	254
STUDY OF WESTERN OIL SHALES	255
CHANGES IN GEOLOGICAL SURVEY STAFF	256
MENDENHALL ON LAND CLASSIFICATION	258
PENNSYLVANIA WORKMEN'S COMPENSATION LAW	259
GEORGE OTIS SMITH'S ADDRESS BEFORE SIGMA XI.	260
MINING PATENTS	261
NEW REFERENCE WORK	263
HARRIS COUNTY, TEXAS, CONTROVERSY	264
MANNING DESCRIBES BUREAU OF MINES EXHIBIT	265
GUIDE BOOK OF WESTERN ROUTES	266
SUPREME COURT DECISIONS	267
PROFESSOR C. A. DAVIS DISCUSSES PEAT PRODUCTS	270
RADIUM SHIPMENTS.	270
EXPERIMENTS WITH PRECIPITATING AGENTS.	272
EDITORIALS.	273
LABOR SITUATION.	277
FRANKLIN COUNTY OPERATORS VISIT OFFICIALS	277
RECENT TRAFFIC DEVELOPMENTS	278
PENDING STATE LEGISLATION	282
RECENT LEGAL DECISIONS	284
PROFESSOR HALDANE DISCUSSES LEASING SYSTEM	288
INDUSTRIAL PENSIONS UNDER CONSIDERATION	290
STATE GEOLOGISTS VISIT WASHINGTON	290
MINERAL TRAFFIC AT PANAMA	291
WORLDS GOLD PRODUCTION AND CREDIT EXPANSION	292
INSTRUCTION OF FOREIGN EMPLOYEES	294
TALK OF THE DAY.	296
NORTH LARAMIE MOUNTAIN WORK	299
PERSONALS	301

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To the Members of the American Mining Congress:

Do you know that you are the owners and publishers of the MINING CONGRESS JOURNAL? We trust you will realize the responsibility of this ownership and that you will lend your active assistance in making the Journal a greater success.

Real mining men should be active members. An application blank will be found on another page of this issue.

Associate memberships are designed for those not actively interested in mining, but who are willing to assist a state Chapter of the Mining Congress in helping to develop the Mining industry within the State. All memberships include subscription to the MINING CONGRESS JOURNAL.

Every member of the Mining Congress should undertake to send in at least one application each month. Will you help by having the following blank filled in and mail to this office?

SUBSCRIPTION AND APPLICATION FOR ASSOCIATE MEMBERSHIP
IN THE
AMERICAN MINING CONGRESS

.....191.....

I hereby make application for Associate Membership in THE AMERICAN MINING CONGRESS, and agree, if accepted, to abide by the By-Laws, Rules and Regulations of said organization and to pay the dues required by same. Herewith find \$1.00 fee and \$2.00 dues for one year, including subscription to the Mining Congress Journal (\$1.00 of which is designated as subscription to Journal).

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OFFICIAL CALL

Mining is essentially a National Business. While composed of many units, it is necessarily a big business. Cooperation of those units is essential to the highest efficiency. Safety, Efficiency and Conservation can only be accomplished through the combined efforts of operator, miner and consumer. The careful deliberation of practical mining men is essential in the solution of the growing problems of the industry. An opportunity for discussion and the outlining of plans through which better conditions may be brought about, will be given

At the
EIGHTEENTH ANNUAL SESSION
of the
AMERICAN MINING CONGRESS

which is hereby called to meet at the
EXPOSITION MEMORIAL AUDITORIUM
SAN FRANCISCO, CALIFORNIA
September 20, 21, 22
1915

REPRESENTATION

The Convention will be composed of the active and associate members of The American Mining Congress and members of affiliated organizations, specially invited guests and duly accredited delegates appointed under the authority hereby extended for the appointment of delegates, as follows:

The President of the United States may appoint ten delegates at large;

The Chief Executives of foreign nations may appoint ten delegates;

Governors of states and territories may each appoint ten delegates;

Mayors of cities and towns, two delegates each and one additional delegate for each 100,000 of population;

Boards of County Supervisors, Boards of Trade, Chambers of Commerce, Mining Bureaus and Exchanges, Mining Organizations, Scientific Societies, Engineers' Associations, and State Mining Schools may appoint two delegates each.

The early appointment of delegates is specially urged and that the name and address of each delegate appointed shall be sent the Secretary at the earliest time possible. Delegates will be advised of the subjects to be presented in order that proper preparation may be made for discussion.

THE AMERICAN MINING CONGRESS,

By order of the Executive Committee,

CARL SCHOLZ, President.

Attest:

J. F. CALLBREATH, Secretary,

Majestic Bldg., Denver, Colorado, May 31, 1915.

NOTICE OF ANNUAL MEETING OF MEMBERS

A meeting of the active members of The American Mining Congress is hereby called to meet at the Exposition Memorial Auditorium, San Francisco, Calif., September 21, 1915, at 7.30 p. m., for the purpose of electing six directors; one director to serve for a period of one year to fill vacancy and five directors to serve for a term of three years, to succeed Mr. D. W. Brunton, Mr. George H. Dern, Mr. Falcon Joslin and Mr. Harry L. Day, whose terms of office expire, and for the transaction of such other business as may be properly brought before said meeting.

THE AMERICAN MINING CONGRESS,

By order of Executive Committee,

CARL SCHOLZ, President.

J. F. CALLBREATH, Secretary,
Denver, Colorado, May 31, 1915.

NOTE—The American Mining Congress is an incorporated body and only active members of the organization can legally vote upon such matters as relate to the permanent business affairs of the Congress, the control of which is lodged in a Board of Directors consisting of thirteen members, who are elected to hold office for three years.

The Board of Directors is largely guided by the resolutions adopted by the Congress in Annual Session, and will maintain a working force continually engaged in carrying out the directions of the Congress.

In the regular deliberations of the Congress, the introduction and discussion of resolutions and other matters, serving upon convention committees, and in every phase of the meeting of the open body, the rights, duties and privileges of the regular members of the American Mining Congress and those of the duly appointed and admitted delegates are the same in all respects.

GENERAL STATEMENT

(The following statements are suggestive only, are offered as the thought of the Secretary and do not assume to represent the judgment of the members of the organization nor to place a limit upon the action of the convention.)

Convention Plan

It is planned to so limit the sessions of the convention that delegates and members may have greater opportunity for attending the Panama-Pacific Exposition. The usual addresses of welcome and responses from the representatives of the several states will be limited to one hour. The papers to be considered by the convention will be printed and distributed to the delegates before the convention and discussion of these papers and the subjects presented will be limited as the convention may direct. Instead of assigning certain times for the discussion of the several subjects a general program will be outlined, and at the first meeting the convention will decide how much time shall be given to the discussion of each subject.

Western Mining

Discussion looking to the better development of Western mining ought naturally to take precedence in a Western convention. How to make mining more profitable, by more efficient mining methods, more effective treatment processes, or a better market for the product, are fundamental questions submitted for discussion.

Gold Mining

Modern business enterprise depends largely on bank credits which are limited ultimately by the gold reserves. Gold reserves remain practically constant without reference to the enormous war destruction of fixed capital and property, and the demand upon floating capital for other than industrial purposes. To replace the present appalling waste will call, the world over, for increased constructive power, increased business enterprise and an increased burden on gold reserves, which, to the extent that the business world comprehends basic conditions, will create an increased interest in gold mining.

Mining Investments

Every increase of western mining development so directly benefits the West as to justify every possible effort to guide investors into channels which give fair promise of satisfactory results. A mining enterprise, unsuccessful as the result of rascality, blocks the way to future investments and injures both the investor, the community which suffered the fraud and every other community needing capital. A great comprehensive movement is being planned by which the state chapters and local sections of the Mining Congress may cooperate with the National Organization in attracting attention to promising opportunities, give accurate and reliable information to all intending investors, and protect them against all but the inherent risks of mining.

Mine Manufacturing

To advertise the mineral resources of the West, to demonstrate the necessity for the development of new mines for the employment of the brains, capital and labor now employed in mines which are being steadily exhausted, and to meet the increased demand for gold in the world's commerce—offers a promising field of public service and private gain to the prospector, the engineer, the promoter and the investor.

The Prospector, the Promoter and the Engineer

The prospector whose patient search calls attention to the possible mining opportunity, the engineer who justifies and plans for the investment, the promoter who secures the money, the mine manager and superintendent who supervise the operation, must each be given sufficient incentive to justify the best work. To the extent that any of these separate callings are uncertain of reward, to that extent must increased returns be promised in order to justify the risk of the undertaking.

The Prospector upon the public domain should have a certain promise of satisfactory title to any claim he may undertake to develop and any question of his right to secure title will necessarily interfere with his willingness to prospect or undertake development work.

The Public Lands Question

Whether the Federal Government shall lease the coal, oil and phosphate lands and water powers, or whether these shall pass into private ownership and subject to the state taxing power, is a question of vital importance to the West.

As an illustration: The coal reserves of the State of Wyoming are estimated at 424,085,000,000 tons. Let us suppose that 25 per cent. of this estimate is available for production. A royalty of 2 cents per ton to the Federal Government would amount to two billion dollars. If 10 per cent. of the estimated coal were to be placed on the market during the next hundred years, it would mean at 2 cents per ton royalty, eight hundred million dollars—or eight million dollars annually, to be derived by the Federal Government from Wyoming, while Pennsylvania and the other great coal producing states of the East would go entirely free from paying similar tribute.

Ten per cent. of the estimated coal reserve of the States of Wyoming, Montana, Colorado and Utah, at 2 cents per ton royalty, would net the Federal Government twenty-five hundred million dollars,—one-third more than the aggregate bonded indebtedness of all the states and cities of the United States.

The Water Powers of the West are more valuable than its coal reserves, and a most modest royalty will net a fabulous income all of which will be a special tax upon the Western States for the support of the National Government, not imposed on the Eastern States.

This is one of the least important reasons why the West protests against the proposed leasing and water power bills.

The question is one which has direct bearing upon mining development and operation, and should receive the serious consideration of the convention.

Conservation

It is estimated that the available unused water power in the United States, without resort to storage is 66,518,500 H. P., that with storage 230,000,000 H. P. is possible. Less than 6,000,000 H. P. is developed and available for present use.

We are annually wasting about one-third of the coal reserves which are being exhausted. We are applying to beneficial use less than 10 per cent. of the inherent possible value of the 500,000,000 tons of coal which is being consumed.

The creation of restrictions to coal mining and the hampering of development of water power under the guise of conservation is a travesty, while the development of resources and the prevention of present waste, is real conservation. Under this head a discussion of the probable effects of the proposed federal leasing system will be presented.

Revision of Mineral Land Laws

A bill for the creation of a commission to recommend to Congress such revision as may be needed in our mineral land laws after public hearings in the West, was passed by the last U. S. Senate, but failed to pass the House of Representatives. There seems a growing belief that the investigations of the proposed Commission should include the questions involved in the leasing and water power bills, and that any legislation should include every phase of this subject and be enacted only after careful and thorough investigation.

Whether these questions should be treated as a whole or whether a patch-work system shall be followed, will justify a full discussion of the general subject.

Co-operation in the Coal Industry

Destructive competition is one of the controlling elements in creating an appalling condition in the bituminous coal industry. First, 2,500 lives are sacrificed and more than 100,000 men are injured annually, in the coal industry.

Second, approximately 200,000,000 tons of coal are wasted annually, being sufficient to exhaust about 35,000 acres of our best coal lands.

Third, more than 500,000 workmen engaged in the bituminous industry are idle more than 100 days each year.

Fourth, more than \$900,000,000 of capital engaged in the bituminous industry is idle more than 100 days each year.

The peculiar conditions surrounding this industry serve to aggravate these conditions which tend directly toward destruction of the small producers and the creation of a permanent monopoly in coal production. Complete cooperation between operator, miner and consumer is essential to the best results. The question is National, not local. It affects all of the people, not part of them. It is equally important to the coal consumer of the future and the operator of today. It is one of the vital public questions which needs solution.

Cooperation which gives the workman a fair wage, the operator a fair profit and the consumer a fair price, should be made possible even though this may involve an enlargement of the powers of the Federal Trade Commission.

Discussion as to the best means of accomplishing these results will be welcome.

Coal Exports

With the market price of coal lower than in any other large producing country, it would seem that export coals lying near the seaboard should absorb the trade of countries lying much nearer to us than to the countries which are now furnishing the larger part of the coal used. The Latin American countries during 1914, imported approximately \$96,000,000 worth of coal, of which the United States supplied less than 25 per cent.

The Federal Trade Commission is especially authorized to investigate conditions in competing countries which permit trade combinations, but lacks authority to approve similar combinations, in order that the business of this country may be put upon an equal competitive basis. A discussion of the means through which our export trade may be so developed as to serve the public good, will be welcome.

Arbitration, Mediation and Conciliation

The bitter feeling, the enormous destruction of property and, above all, the loss of life which has resulted from labor disputes should by some process be avoided without discouraging any proper effort by workmen to better their condition. The question is one which affects not only the parties involved, but the general public, in that every waste occasioned by strikes and lockouts must necessarily be paid for by some one, and usually by the consumer.

The enactment of the Clayton Bill by Congress, and the final adjudication of the Danbury-Hatters Case are two notable recent happenings. The one intended to relieve labor entirely, from the provisions of the anti-trust laws, the other to fix a responsibility not theretofore generally recognized.

The American Mining Congress should be able to discuss the principles involved in good temper, with a view to meeting the just demands of both sides of such controversies.

In the discussion of this most important question it is hoped to lay the foundation for constructive effort.

Workmens' Compensation

The reduction of the occupational hazards of mining to the minimum is a first duty. Second, it is important that proper provision shall be made for the widows and orphans of those whose lives are lost.

The great expense of conducting employers' liability insurance and the bad feeling which frequently grows from the settlement of losses under this plan, has led to workmens' compensation as a more satisfactory means. Workmens' compensation laws have been enacted in several states. In the making of these laws, efforts have been made to create conditions fair to both employer and employe. The experience under the operation of these laws should guide to more perfect enactments in such states as are yet to consider this subject. A report of our committee on workmens' compensation as a recommendation to other states will be considered.

Mine Taxation

The many different rules applied to the taxation of mines is sufficient proof that most of them are not correct in principle. An effort looking to a uniform system of taxation where similar conditions prevail, to the extent that it is successful, will be of benefit to the mining industry. A further report of the committee on mine taxation will be presented for the action of the convention.

Metallurgical Research and Mine Safety Stations

The enactment of the Foster Bill by the last session of Congress authorized the creation of ten metallurgical research and seven additional mine safety stations. The research stations are to be located in the metal mining sections, and are designed to find solution for the various problems of metal mining. A discussion of the means by which appropriations, to make this bill effective, may be secured from Congress will be welcomed.

Resolutions

Any member of the convention may introduce resolutions upon any subject relating to mining. Resolutions are read to the convention and without debate referred to the committee on resolutions, composed of one member from each state represented in the convention, selected by the delegates in attendance from such states. Members desiring to introduce resolutions are requested to submit them in advance and the secretary will gladly lend assistance in putting the resolution in proper form for consideration.

Resolutions submitted in advance will receive the special attention of the committee on resolutions.

AMERICAN MINING CONGRESS

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THE MINING CONGRESS JOURNAL

Official Organ of the American Mining Congress

SELBY SMELTER COMMISSION SUBMITS ITS REPORT IN SMOKE CONTROVERSY

Director Holmes of Bureau of Mines, in Preface to Findings, Explains Why
Expert Investigators Under Direction of Government Command
Respect—Results of Parley May Avoid Extended
and Expensive Litigation

One of the most important publications from the Bureau of Mines during the current fiscal year is the report of the Selby Smelter Commission. Dr. J. A. Holmes, director of the Bureau of Mines, is chairman of the commission; Edward C. Franklin, professor of organic chemistry at Leland Stanford University, and Ralph A. Gould, a widely known mechanical engineer, complete the commission.

The report covers 1,000 printed pages. Owing to the expense of printing this document, it will not be distributed gratis, but will be sold by the Superintendent of Documents for \$1.50 per copy. It probably will be six months before the proofs will be corrected and the printing complete.

WORK OF BUREAU

In his preface, Dr. Holmes says:

Smelter-smoke problems are among the first to receive attention by the Bureau of Mines in its endeavors to increase efficiency and lessen or prevent waste in the utilization of the mineral resources in the United States. The problems presented to the bureau included the determination of the actual economic waste involved in the escape of dust fume, and gas from the stacks of metallurgical plants, more especially those treating sulphide ores, as well as the damage to plants and animals and the creation of a public nuisance.

The work undertaken by the bureau involved the examination of conditions in the vicinity of smelting plants and the methods adopted or on trial to prevent the loss of valuable substances in smelter smoke and to prevent damage by the constituent fumes and gases; the determination of new uses or wider uses for those constituents wasted from lack of a market or inability to recover them at a profit by existing methods; and also the laboratory study of the fundamental physical and chemical reactions of those metallurgical processes that cause smoke and fume.

ALWAYS WILLING TO HELP

As in its investigations relating to the methods of increasing safety and health conditions in mines, so in its metallurgical investigations the Bureau of Mines endeavors to cooperate actively, as far as it can under the terms of its organic act, with Government and State bodies and with private organizations that are endeavoring to bring about such improvements in industrial methods and conditions as come within the scope of the bureau's purpose. Although the bureau is forbidden by law to make reports on mineral properties for private individuals, its engineers and chemists, as expert advisers for the Government, have done much work dealing with safety and efficiency in the development and utilization of the mineral resources of the country.

CAN AVOID LITIGATION

Moreover, the bureau has believed that much controversy and much needless and expensive litigation regarding damage to public interests by mines or by metallurgical plants

can be avoided by the appointment of commissions composed of unbiased experts who, from the knowledge of the principles involved, will determine with precision the essential facts and their relation to matters in controversy and will lay down findings that, because of the manner in which they have been formulated, will be accepted as final by the parties at interest. Absolute freedom of judgment is necessary for the success of such a commission. Expert testimony produced by either litigant is under suspicion by the other, but scientific and technical investigations by the Federal Government inspire confidence and findings based on such investigations command respect.

For these reasons when, as a result of protracted litigation between the Selby Smelting & Lead Co. and the citizens of Solano County, Cal., it was decided to refer to a commission the question whether the Selby company was violating the terms of a court injunction, the director of the Bureau of Mines, under instruction from the Secretary of the Interior, accepted the chairmanship of the commission; and various chemists and other employes of the bureau who had been or were engaged in work relating to smelter-smoke were authorized to facilitate the work of the commission by carrying on incidental investigations. Under this arrangement the commission benefited by the work of skilled experts, and the Government employes gained valuable knowledge and experience without the Government being subject to any additional expenditure.

SCOPE OF REPORT

This bulletin presents the report of the commission and the papers prepared by the various experts, which give the results of investigations undertaken by the commission and form the basis of its findings. The papers include detailed discussions, the effect of smelter-smoke on vegetation, by A. E. Wells, J. W. Blankinship and W. S. Jones, and on horses, by C. M. Haring and K. M. Meyer, and a review of local opinions, by C. B. Dutton. These papers are published essentially as presented to the parties at issue—the smelting company and the county officials—except that, in editing, certain changes of style have been made in compliance with the Government regulations and certain statements dealing with the testimony of witnesses before the commission have been modified or stricken out, the purpose being to present all essential facts relating to the questions submitted to the commission and to omit such opinions as did not rest on provable statements.

As here assembled, the report of the Selby commission is published by the Bureau of Mines as a contribution to the literature of metallurgical smoke in its relation to plant growth and to public health and comfort, and as an example of what is believed to be a satisfactory method of dealing with legal controversies over the damage caused by mining and metallurgical establishments.

The subject matter of the report will not be ready for release for several weeks yet.

EIGHTY-FIVE ENGINEERS ARE ENGAGED IN WATER RESOURCE INVESTIGATION

Eighty-five engineers are engaged in the field work being conducted by the water resource branch of the United States Geological Survey. Twelve hundred gauge stations are being maintained, at which the daily flow is being registered. The work is under the direction of fifteen district officers. Much of the information being gathered is of interest to miners, in that it covers power developed and shows where hydraulic mining can be conducted.

EXPLOSION-PROOF COAL CUTTING MACHINE APPROVED

The first approval granted by the Bureau of Mines to an explosion-proof coal-cutting machine has been extended to the Sullivan Machinery Co., of Chicago. The permit covers the following parts:

One explosion-proof electric motor; one explosion-proof starting rheostat and fuse; one explosion-proof cable reel.

The use of all these parts is considered to be essential to the permissibility of the equipment.

Spriggs Made Board Member

E. A. Spriggs, of Townsend, Mont., has been named a member of the State Industrial Accident Board by Gov. Stewart. Mr. Spriggs formerly was Lieutenant Governor of Montana and is one of the best-known mining men in the West.

To Open Boston Office

A sub-station of the Water Resource Branch of the Geological Survey will be opened in Boston, July 1. It will be in charge of Chas. H. Pierce. This office will be made the headquarters for studying the water resources of New England.

EXPERTS BELIEVE THAT LATENT BILLIONS ARE REPRESENTED BY WEST'S OIL SHALES

Bureau of Mines and Geological Survey are Jointly Working on Problem Which May Mean Much to Mining States—Experiments Give Further Proof For Theory That Petroleum is of Organic Origin

Imbued with the idea that the oil shales of the West represent billions in latent values, experts of the Geological Survey and the Bureau of Mines are burning much midnight oil in their efforts to learn more about them. Prof. C. A. Davis, who has charge of fuel technology at the Bureau of Mines, is conducting a careful series of experiments, to show that the shales are organic in origin. These experiments include painstaking work with the microscope.

PHOTOGRAPH SLIDES

Prof. Davis has photographed a large number of his magnifications which show clearly the presence of vegetable and animal matter. The shales abound in a low type of vegetable life which indicates that they were laid down in water. There is also evidence that some of the shales were formed in water close to the shore, as evidence of the proximity of trees exists.

These shales exist in enormous quantities in Utah, Wyoming and Nevada. The veins in some places are 3,000 feet thick. While the shales burn almost as rapidly as coal, they contain a very much higher percentage of ash. This precludes their development as a commercial fuel under present conditions. As the shales contain a high percentage of petroleum there is much hope that some means may be devised for its economic distillation. The prospect of this is more favorable in regions where there is no oil.

CHECK UP STRUCTURE

The investigation of oil shales is being conducted jointly by the Bureau of Mines and the Geological Survey. Dr. David White, chief geologist, has charge of the work for the Survey. Together with Prof. Davis, he is working out the

history of these shales. They are checking up the structure of the material being tested. Their work tends greatly to strengthen the theory that organic material is the source of petroleum.

MINING CONGRESS MEMBER WHO IS A PHILANTHROPIST

One of the stalwart members of the American Mining Congress is "Uncle" Jesse Knight, of Provo, Utah. A recent inspection by a representative of the Mining Congress, of the Knight bank, the Knight stores, the Knight factories, the Knight offices and the Knight woolen mills, developed the fact that the operation of the woolen mills has shown a deficit of more than \$20,000 annually ever since they were put in operation. In response to the inquiry as to why he continues operation at a loss, Mr. Knight replied: "Well, it does seem foolish, but it gives employment to a lot of boys and girls who have no other way of making a living if we close them down. You see, Provo is not like a big city, where there is always other employment to be had." Is it any wonder that all the people call him "Uncle Jesse"?

Evans Visits Washington

Geo. W. Evans, of Seattle, spent several days in Washington last month conferring with officials here with regard to Alaska coal matters. Mr. Evans is an acknowledged authority on all matters pertaining to the Behring River coal fields. He is said to have a more comprehensive knowledge of this coal field than any other mining engineer. He is also familiar with the Matanuska coal field. He had charge of the work of securing samples of this coal for the Navy Department.

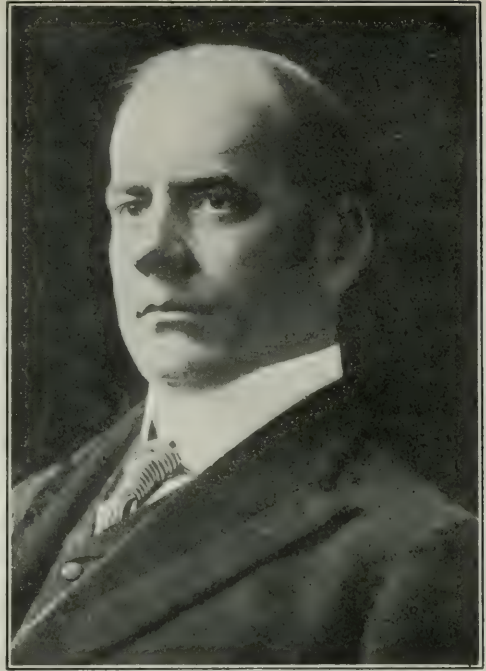
ANTHRACITE COMPANIES GET SURVEY STATISTICIAN

**Edward W. Parker Will Conduct General
Information Bureau for Coal
Concerns**

**H. D. McCaskey Becomes Chief of Mineral
Resources—C. E. Leshner to Handle
Statistics**

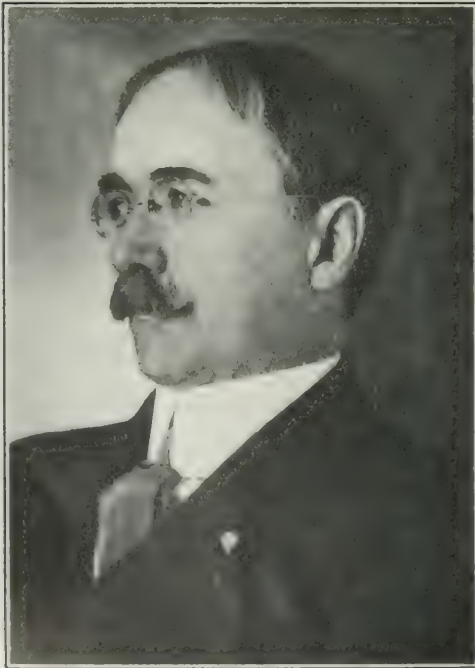
After many years in the Geological Survey, Edward W. Parker, coal statistician of the Government and chief of the Division of Mineral Resources, has resigned to take charge of a statistical bureau to be maintained by the anthracite coal companies.

One of the main objects of the bureau is to make available intimate information in regard to the anthracite industry and to attempt to educate the public in many of the matters pertaining to the mining and marketing of coal. The headquarters of the bureau will be at Wilkes-Barre, Pa. Mr. Parker's resignation will take effect July 1.



EDWARD W. PARKER

Who is to take an important post with the anthracite coal companies



H. D. McCASKEY

New Chief of Mineral Resources, U. S. Geological Survey

Mr. Parker is a native of Maryland. As a young man he went to Texas and for some time was connected with the *Austin Statesmen*. He came to Washington to assist in the work on the eleventh census. From the Census Bureau he was transferred to the statistical work in the Geological Survey.

In 1901 Mr. Parker left the Survey to become the editor of the *Engineering and Mining Journal*, of New York. He continued this work until appointed by President Roosevelt to serve on the Anthracite Commission in the latter part of that year. After the work of the Commission was completed he was returned to his old place in the Geological Survey.

Mr. Parker has been a frequent contributor of scientific and technical matter to trade papers, and has appeared often before technical societies in the presentation of the results of his statistical work. He was a member of the Jury of Awards at the World's Columbian Exposition at Chicago, and also at the St. Louis fair.

TAKES CHARGE JULY 1

H. D. McCaskey, who is the ranking member of the staff at the Division of Mineral Resources, will take charge of this portion of the work July 1. The coal statistics will be handled in the future by C. E. Leshner, who has been doing work in the Mineral Land Division of the Land Classification Board.

Mr. McCaskey has been with the Geological Survey since 1907. He was made a section chief in 1912. He is a geologist and mining engineer of reputation. He was connected with the Philippine Mining Bureau from 1900 to 1906. During the last three years of that time he was chief of the bureau.

Mr. Leshner is a graduate of the Colorado School of Mines. After finishing the work of that institution in 1908, he spent two years in British Columbia in electric zinc smelting, gold mining and milling. For a time he was connected with the American Nitrogen Co., of Joliet, Ill., and later with Michael Hayman Co., of Buffalo. He began the work with the Survey in 1910. For two and a half years he has been chairman of the Coal Board. During his work for the Survey he has done field work in connection with coal in North Dakota, Montana, Wyoming, Colorado, Oregon and Washington.

Insurance Company Liquidated

Liquidation of the Illinois Coal Operators' Mutual Employers' Liability Insurance Company was accomplished at a recent meeting. Despite the many difficulties under which the company labored throughout its career it was not insolvent. Referring to the passing of the company, *The Coal and Coke Operator* says: "This does not mean that the old company failed in the sense that that word is commonly used. It means merely that, with the pioneer work in mutual insurance done, a new company is thought the best solution, if the coal operators desire to have a company."

Work in Del Norte District

Two parties from the Geological Survey have begun topographical work in the Del Norte district of Colorado.



C. E. LESHER

Who will take charge of Coal Statistics, U. S. Geological Survey

CALIFORNIA MINING BUREAU**ISSUES NEW PUBLICATIONS**

The California State Mining Bureau has just published a large map folio covering the petroleum industry of California. Its large maps are exceptionally well executed. A brief geologic record of California is given. Fossils, characteristic of California formations, are enumerated. Specimens of these fossils are photographed and made a part of this volume.

The California State Mining Bureau has also put into extensive circulation its Bulletin 69. It is entitled "Petroleum Industry of California," and is the work of F. McN. Hamilton, the State mineralogist. The book is bound in cloth and contains 519 pages. It contains numerous illustrations and many charts. The statistics are tabulated skillfully, making the data particularly available.

Maps Marble District

The Geological Survey is making a map of the famous Wetumpka marble district of Alabama.

HEAD OF BOARD TALKS ON LAND CLASSIFICATION

W. C. Mendenhall Says He Believes West Misunderstands Administration Plan

One of the most important activities of the United States Geological Survey in the Western States is the function of land classification; that is, a determination of the character of the lands. For instance, some of the public lands are most valuable because of the coal that they contain, others because of their oil content, still others because of some other mineral deposit. Of the non-mineral lands, some may be irrigated, others are chiefly valuable as public range, still others because of the springs that they contain or because of the power that may be developed from the streams that flow over them. There are special laws for the disposal of each of these classes of lands and before these laws can be administered the type of land must be determined. This task is that of land classification.

DUTIES HAVE GROWN

The organic law of the survey approved in 1879 mentioned, as one of the specific functions of the then new bureau, this function of land classification. The new bureau was a small one, the public domain then was very extensive, the public land laws were relatively simple, and this function of land classification was therefore not actively exercised at first. Gradually, however, succeeding Secretaries of the Interior have called upon the survey more and more for the assumption of its full duties under the organic act. Now the classification of the public land absorbs no small part of the survey's energies and requires in its performance a special organization within the survey, namely, the Land Classification Board.

W. C. Mendenhall, chief of the Land Classification Board, in discussing the present temper of the West in this regard, says:

"There seems to be a great deal of misunderstanding among the people of the Western States as to the effects and

purpose of some of the steps taken as incidents in the work of classifying the lands of the public domain. For instance, it seems often to be assumed by those who oppose withdrawals that these withdrawals are permanent, that they withhold the land affected from all types of use, and that they serve merely to interfere with development. This is a most mistaken idea. The most extensive withdrawals are those for coal land classification. More than 48,500,000 acres are now included in withdrawals of this type, but these withdrawals are temporary and withhold land only from acquisition under the coal land law until the character and quality of the included coal can be determined and prices can be fixed accordingly. Meanwhile, these lands are all open to acquisition under the homestead laws, the desert land acts, and practically all other non-mineral land laws. Agricultural development can proceed, therefore, as actively and with as little interference in the areas of coal withdrawals as elsewhere. But even these land are restored to entry under the one law whose operation is temporarily suspended by the withdrawal, namely, the coal land act, as rapidly as appropriate prices can be fixed upon the contained coal. These classifications are completed and restoration perfected at the rate of from three to ten million acres per year.

PUBLIC WATER RESERVES

"Let us consider another type of withdrawal, that of the so-called public water reserves. These are withdrawals of small areas surrounding springs on the public ranges. Their purpose is to keep these springs open to public use by preventing their acquisition by those who would fence them off and exclude stock from them. This is a device sometimes resorted to by rival stock interests who desire to exclude competitors from the adjoining range, that should be open to all, by controlling the water without which the range is useless. It is sometimes resorted to by those who would take advantage of the homestead law, not with any idea of creating a home upon the land, but solely with the idea of speculating upon the necessities of the stockmen who must have access to the

water in order to use the range. Many of the withdrawals of this type have been made as a result of petitions by citizens of the community affected, who realize that the welfare of that community is safeguarded and promoted by keeping these important watering places available for public use.

"Still another type of withdrawal whose purpose and effect which is widely misunderstood is that of water power sites. It seems to be considered generally that the withdrawal of a water power site prevents the use of that site for water power development. This is an entirely mistaken notion. Such a withdrawal, in general, protects the site from acquisition by those who would interfere with the development of the water powers or who desire to evade the water power law. When a bona fide applicant for water power privileges appears before the department with a request for permission to develop hydro-electric powers upon an area that is withdrawn, that permission is granted and the withdrawal is modified in so far as its modification may be necessary in order that the power site may be utilized.

"All the withdrawals are temporary in their nature and result, either, as in the case of the coal land law, simply in giving the department time to effect the necessary classifications, so that the nation's resources may not be given away at absurdly inadequate prices, or in the case of the public water reserves and the power site reserves in saving these lands for the use to which they are best adapted. All of the withdrawals give Congress time to consider the adequacy or inadequacy of the present laws for the disposition of these natural resources and to frame, if it deems that course wisest, better laws than those we now have. The past two or three sessions of Congress have given very serious consideration to this matter of the revision of our mineral and other public land laws, and it is apparent that new statutes will be enacted in the not far distant future that may alter materially the nation's method of disposing of its remaining natural resources."

MINING CONGRESS ALWAYS READY TO HELP MEMBERS

Any member of the American Mining Congress is entitled to apply to the Washington office for any service which can be rendered. Matters will be laid before any department or will be taken up with the White House. Oftentimes more can be accomplished by personal interviews than by correspondence.

Washington has a wealth of reference facilities. These are at the service of the members of the American Mining Congress if anyone will acquaint the secretary with his desires.

The staff of the Washington office is always at your service.

PENNSYLVANIA WORKMEN'S COMPENSATION LAW PASSES

The Pennsylvania Workmen's Compensation Law was passed by the legislature substantially as printed in the last issue of THE MINING CONGRESS JOURNAL. The law is being praised and condemned by its friends and enemies, respectively. Varieties of predictions are being made as to the success of the new law in operation, but it is yet too early for the public to have definite conclusions as to the new statute.

EXTENSIVE INVESTIGATION OF PHOSPHATE ROCK IN PROGRESS

Extensive work is being done by the Chemical and Physical Research division of the Geological Survey in the investigation of phosphate rock in western Wyoming, Utah, Idaho, Tennessee, and Kentucky. In addition, investigation actively continues of western brines and saline deposits, in the effort to discover a domestic supply of potash. This division is also being very active in its work with carnallite ores in Colorado and Utah. It also has charge of the analysis of marine invertebrates to determine what each class contributes to marine limestone.

PUBLICITY PENETRATING DEEPER INTO BUSINESS

George Otis Smith Discusses Changing Attitude on Part of Industrial Companies

Makes Plea for Greater Utilization of Forces of Nature—Believes Earth is Still Young

In an address before the annual joint meeting of the Phi Beta Kappa and Sigma Xi societies of the University of Illinois, George Otis Smith, director of the Geological Survey, among other things made the following observations:

The bright light of publicity is coming to shine more and more upon the inner workings of all private business which has anything of the public service character. Only about three years ago, at a conference on water power policy, I heard the representative of the banking houses interested in the hydroelectric business tell the Secretary of the Interior with considerable warmth of spirit that one thing the men who make possible the development of our country by their contribution of capital would not stand for was any legal requirement of inspection of their accounts by the Government. A corporation has its rights, they continued, just the same as a private man in business. Last year in the same room, when the utilization of a large power site owned by the Government was being discussed, I heard those asking for the permit to dismiss the question of Federal inspection of their books with the remark: "That need not be discussed, our books, of course, will be open always to any authorized representative of the Government." The ultimatums pronounced by the ambassadors from Wall Street, State Street, and West Adams Street, are shortlived in the present atmosphere of popular interest in these business questions.

At another point in his address, Dr. Smith said:

It is simply axiomatic that the world has reached the stage where science has entered everyday life to a degree that even our fathers never dreamed. Physical forces and natural resources are harnessed to the use of man, and the miracle workers who can control these Titans are essential members of the body politic.

In conclusion the Director of the Geological Survey declared:

The most philosophic of American geologists, Prof. Chamberlin, after studying exhaustively climatic conditions in the long geologic past and after weighing carefully

the possibilities of disaster to our earth from collision with some star, has shown that we have good reason to measure the future habitability of the earth at millions or tens of millions, if not, indeed, hundreds of millions of years. Sharing Prof. Chamberlin's inspiring belief in the probability of racial longevity, do we not gain a real incentive to scientific research into the great utilization of the forces of nature, an added argument for the application of the truths of science to civic progress, and a larger faith that the Golden Age is in the future—that the highest development of our country and of the world is to be witnessed by those who are to follow us? Are not our ideals practical and is not such a vision a call to larger service?

The complete text of Director Smith's address is printed in the Sigma Xi quarterly for June.

DAILY MINING RECORD GETS OUT NOTEWORTHY NUMBER

Considerable comment has been caused in the East by the comprehensive analysis of present-day conditions in the Cripple Creek Mining Camp, as set forth in the recent Greater Cripple Creek edition of the *Daily Mining and Financial Record*, of Denver.

The special edition is profusely illustrated and contains a large amount of descriptive statistical matter.

One of the features of the publication is its signed editorials. They are contributed by a number of prominent men entirely familiar with conditions in the camp.

Tell How To Use Gas Waste

In an effort to prevent some of the waste of natural gas incidental to oil mining, the Bureau of Mines just has issued a bulletin on the condensation of gasoline from natural gas. The authors are George A. Burrell, Frank M. Siebert and G. G. Oberfell. The condensation of gasoline from natural gas offers to the oil operations a profitable means of utilizing some of the oil well gas now being wasted. The bulletin describes practical ways in which this can be done.

Map Kentucky Coal Fields

Two Geological Survey parties are cooperating with the State geologist of Kentucky in mapping the coal fields in the southeastern part of that State.

APPARATUS FOR TREATING LUMPY COPPER ORE IS PATENTED

Bernard MacDonald, of Los Angeles, Devises Process Claimed to Have Especial Merit in Treating Granulous Ore—Victor, Colorado, Man Devises Ore Grinder With a Plurality of Disks—Other Patents.

Patents of interest to the mining industry have been granted during the past month as follows:

Apparatus for treating ores, No. 1,139,428. This invention is by Bernard MacDonald, of Los Angeles, Cal. Mr. MacDonald claims to have devised an apparatus for treating crude or roasted porous ores, especially copper ores of a granular or lumpy character, which may be leached by percolation through a mass of ore or water, or a solution of a suitable chemical. It is also the intention to provide means whereby air or a suitable gas may be introduced into the mass or ore during the course of the leaching operation to facilitate the mechanical reaction necessary for dissolving out the metals from the ore.

In part, the description of the invention is as follows:

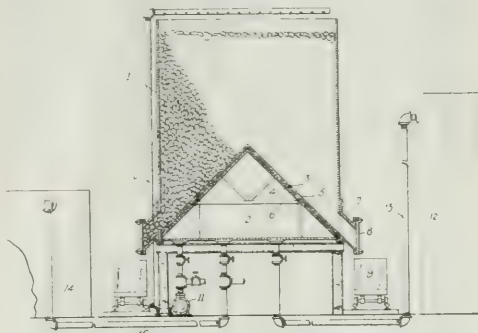
A combination of a tank provided with a water-tight bottom, an inclined perforated false bottom within the tank, forming a chamber between it and the water-tight bottom, into which chamber the liquid with which the ore is treated will percolate. A transfer pipe at its lower end communicating with the chamber, and has its upper end arranged to deliver the liquid into the tank at the top, means is provided to force the liquid to flow upward through the transfer pipe and discharge upon the ore within the tank. A precipitation tank and a receptacle for gas also are provided.

ROTARY ORE GRINDER

Ore grinder, No. 1,138,966. This invention is by Edward F. McCool, of Victor, Colo. Mr. McCool has devised a machine in which a plurality of discs is employed. One of the discs is stationary. The others are capable of a combined rotary and rocking motion. The invention provides for the convenient removal and replacing of the disks, and means of adjusting the movable disk in order to vary the quality of the ground product.

In part, a description of the invention follows:

A sleeve and means for driving it. A shaft eccentrically supported within it. Means for transmitting the motion of the sleeve to the shaft. A grinding disc pivotally supported by the end portion of the shaft and means carried by the shaft to rotate the disk. Means are provided for further locking the discs together. It is also provided with a grinding disc having two arms extending laterally from a point opposite its center, the clutch disc has a portion of its face hollowed out, pro-



NEWLY INVENTED PLANT FOR TREATING LUMPY ORES

jections extending inwardly from the rim into the hollowed out portion. The arms of the grinding disc are adapted to bear against the projections and under the spring members of the clutch disc.

FACILITATES CAR UNLOADING

Coal Breaker and Scraper, No. 1,138,627. This invention is by Joseph P. Considine, of Detroit, Mich. Mr. Considine claims to have devised an improved means for easy and rapid unloading of a car of slack or largely pulverized coal, in spite of the tendency of such material to harden and cake when damp and particularly in freezing weather.

In part, the invention is described as follows:

It has a combination with a supporting trackway, a traveling carriage provided with toothed wheels adapted to engage correspondingly located indentations on the trackway, a boring spud slidably held in vertical position by the carriage with flexible means for supporting the spud at the desired elevation with respect to the carriage, means for causing an impacting downward movement of the spud without objectionable transmission of the shock to the traveling carriage and adapted to be actuated after the driving of the spud has been completed, whereby the toothed wheels of the carriage are positively rotated to cause the movement of the carriage along the trackway.

ORE SEPARATOR

Ore Separator, No. 1,139,064. This invention is by Hugh H. McGovern, of Oak Grove, Cal.

Mr. McGovern claims to have devised certain new and useful improvements for ore separators. The invention has relation, in particular, to an ore separator of the centrifugal type, and the object of the invention is to provide for improved means whereby the ore will be operated upon in a thorough and effective manner to secure maximums of results. The invention is described in part as follows:

A centrifugal ore separator comprising of a body mounted for axial rotation, a bowl secured to the body and a second bowl nested within the first and operated therefrom. The bottom of the inner bowl is substantially open. Each of the bowls is provided with a surface adapted to the retention of valves. The bowls are positioned so as to subdivide the pulp. Each is adapted to concentrate separately its respective portion.

LEACHING PROCESS

Process of Leaching Ores, No. 1,137,874. This invention is by Jasper A. McCaskell, of Salt Lake City, Utah. Mr. McCaskell claims to have devised a process for leaching gold, silver and copper ores and then regenerating the solvent.

In part, the invention is described as follows:

The process consists, essentially, in producing chlorine gas electrolytically from metallic sodium chlorides, using the chlorine thus produced to chlorinate the metals in the ore that is being treated, and subsequently electrolyzing an aqueous solution of the chlorides in the cathode side of the electrolytic cell, thereby regenerating the original sodium chloride, the metals in the solution being deposited on the cathode side of said cell.

INVENTS MILL

Mill for Treating Ores, No. 1,139,064. This invention is by Albert V. Park, of South Melbourne, Australia. Mr. Park claims to have devised new and useful improvements for the pulverization of ores and like substances.

Hitherto it has generally been necessary to break the ore to a predetermined size, then to crush it to a comparatively small size, and finally to grind it to a very fine condition. The ore has then been treated for the recovery of the precious metals it contains.

In pulverizing ores previously a stamper battery has generally been employed wherein a reciprocatory stamper head repeatedly falls upon the broken ore and is partially rotated during each elevation so that as it descends a different portion of the head is presented to the ore with each blow in order to equalize the wear and tear upon the head. The stamper head upon encountering the ore immediately comes to rest as its operating devices provide an intermittent action only. Further, as the stamper head descends repeatedly upon the ore that which is disintegrated sometimes serves an adverse purpose in providing a pad

for the larger ore above it. Still further, the box containing the ore usually contains also several inches of water through which the stamper head must pass before reaching the ore. This water offers resistance to the head, a battery being on the whole very uneconomical in practice. In present day treatment, also, there are certain classes of sands and tailings from which precious metals cannot be extracted because it is impossible to reduce the material economically to a sufficiently fine state or regularity of size. In reducing ores preparatory to the recovery of their precious metals it is necessary for the ore to be of even and regular size, the greater the regularity the more economical being the recovery. The fineness or size depends upon the class of ore.

It is recognized by most authorities that to economically reduce ore it is necessary to systematically and automatically feed the ore to whatever reducing devices are employed and to just as systematically and automatically discharge the material as it is reduced to the size desired. This, however, has never been actually attained in practice.

The object of this invention is to provide a single apparatus wherein ore may be positively reduced much more cheaply and expeditiously than hitherto and wherein the ore is reduced to a maximum uniformity and; if necessary, to an exceptionally fine state, it being desirable to secure uniformity if a maximum recovery of the precious metals is to be obtained.

By the invention the first cost and also the cost of maintenance is reduced and the cost of transport, installation and labor greatly lessened. In addition, far more material may be treated in a given time and the precious metals recovered from the comparatively quickly reduced ore in a far greater percentage than has previously been thought possible. For example, it has been proven that with the use of the present invention, tailings may be expeditiously treated and precious metals in payable quantities recovered from the finely pulverized material although the said material has previously been discarded as unworkable with profit. So efficient is the apparatus in reducing ore that in many instances it is possible to dispense with certain expensive treatments at present practiced. The major causes of the economy and efficiency of the present invention reside in the action of the reducing devices, in the systematic and automatic feed of the ore to the said reducing devices and in the discharge of the reduced material therefrom.

The invention in effect embodies the functions of a rock breaker, stamper battery and grinding device in one apparatus.

In part, the following claims are made for this patent:

It comprises of an inner and outer disintegrator each having a percussive and a rotary action upon the ore. The disintegrators have means to discharge automatically the ore as it is reduced. Means for automatically

feeding successive charges of ore to the disintegrators is provided. A sprayer for preventing dust arising during reduction of the ore is provided.

MINIMIZES GALVANIC ACTION

Metallurgical Apparatus, No. 1,138,284. This invention is by Henry B. Faber, of Brooklyn, N. Y. Mr. Faber claims to have devised a means of minimizing galvanic action, and thereby obviating corrosion incident to contact of dissimilar metals in the presence of a dissociating solution.

In this connection Mr. Faber makes the following statement:

It is commonly known that practically all metals and their alloys are unable to withstand the contact of acids or alkalis. Dissociation of the metallic ion or ions, as the case may be, occurs in varying degrees according to the nature of the solvent. I have found, however, that "hard lead," that is, lead alloyed with a little antimony, and commonly known on the market as "type metal" will withstand the corrosive action of solvents to a greater extent than any other alloy. Certain bronzes also show a substantial resistance to the action of dissociating solvent. When, however, bronze and hard lead are caused to contact in the presence of such solvent, galvanic action occurs which has the effect of greatly increasing the action of dissociation. To avoid such galvanic action and its objectionable results, I have found it necessary to prevent contact of such dissimilar alloys or metals as otherwise naturally resist largely the dissociating effect of alkaline or acid solvents. To space the dissimilar alloys or metals by an intervening metal different from either, and of any of the common metals subject to ionizing in the presence of solvent, would only complicate the problem presented, and I have, therefore, after careful experimentation discovered that by separating hard lead and bronze, for example, by an interposed sheet or lamination of some substantially non-corrosive substance which may serve as an insulator, the galvanic action will be largely or entirely obviated, and I find that tantiron and duriron effectively serve as such insulating lamination, and at the same time where relative movement occurs between the two insulated bodies such lamination aids in preventing scoring of the contiguous faces of the parts by particles of silicious or other materials working their way between the relatively active surfaces.

Distribute Roberts' Book

A number of important coal mining companies are distributing to their men copies of a booklet by Wightman D. Roberts, of Huntington, W. Va. The work is entitled "The Man With a Job." It is a clever exposition on the value of having continual and remunerative employment.

NEW REFERENCE WORK TO BE WORTH THOUSANDS TO MINERS

One of the most important publications yet to be issued by the Bureau of Mines is to come out shortly. Two volumes of 1,000 pages each will be devoted to a compilation embracing every statute or act ever passed by Congress having to do with metal, iron, gas or coal. It will be known as "United States Mining Statutes Annotated."

The annotations consist of abstracts of decisions of all courts of the United States, Federal and State, as well as decisions of the Land Office and of the Attorney General.

These volumes are the result of long and pains-taking work on the part of Judge J. W. Thompson, chief of the legal section of the Bureau of Mines. In the opinion of competent authorities, this work will be worth many thousands of dollars annually to owners and operators of mines.

The last of the proof has been corrected on each of the volumes and the finished work is expected to come from the press of the Government Printing Office within the next thirty days. Owing to the heavy cost of printing, this work will not be distributed gratis. It is a sale publication, to be sold at cost, which will be \$1 or \$1.50 for the two volumes.

TO HELP MAKE AWARDS

Bureau of Mines Men To Be on Jury at Panama Exposition

G. S. Rice, of the Pittsburgh branch of the Bureau of Mines, and Dr. F. G. Cottrell have been appointed on the international Jury of Awards at the Panama-Pacific Exposition. The jury will sit May 10 to May 20. On their return from San Francisco they will visit stations of the Bureau of Mines. They also will confer with officials in Illinois concerning cooperative work and also will talk with Edwin Higgins in regard to the investigation of rock dust in the Joplin mines.

GEOLOGICAL SURVEY READY TO AID IN PUBLIC WORK

Director Smith Refutes Charge That His Bureau has Infringed on Private Engineers

Considerable interest has been aroused by discussion in some of the engineering papers regarding alleged unfair competition by the Geological Survey with private engineers. The matter is of particular interest just at this time as the same charges are being made as to the activities of various Government departments.

A contract opened for bids recently in Harris County, Tex., is the basis of the present discussion. Director George Otis Smith, of the Geological Survey, states that the contract in Harris County is public work, and that it is the intention of the Geological Survey to cooperate with any Government agency, be it Federal, State or county, wherever possible. He states that no ground has been given for the charge that the Survey has invaded the field of private engineers.

Brown & Clarkson, of Washington, topographic engineers, who were among those bidding on the Harris County contract, take the stand that the Survey has invaded a domain which is legitimately that of the private engineer. This firm makes the following statement of its case:

"In January and February of the present year the county commissioners of Harris County, Tex., advertised for bids for the making of a topographic survey of their county and for drainage report and plans based on that survey. Fourteen bids from private engineers or engineering firms were received and were opened February 10.

"While these bids were being considered, the U. S. Geological Survey, which had been in correspondence with the Houston Chamber of Commerce through a member of Congress, submitted a proposition for the making of the topographic survey, making the proposition so attractive by offering to contribute \$5,000 towards the cost of the survey and free use of instruments, that the offer was accepted and the fourteen bids rejected.

"In doing this the U. S. Geological Survey entered directly the domain of the private engineer, and by the use of government funds and prestige is enabled to overcome any competition that the private engineer might be able to offer in such work.

"It is our hope that, by placing this matter before the engineers of the country, they will demand that the limits of activity of the U. S. Geological Survey be so defined and

limited that other cases of unfair competition similar to the Harris County affair will be rendered impossible."

Director Smith has discussed the matter in detail with those inquiring, and in addition has written several letters setting forth the position of the Survey. He points out that the Harris County work differs in no essential features from various other activities of his bureau in the past and at present. He emphasizes the fact that it is the duty of the Survey to cooperate in public works wherever possible.

THINKS MINING CONGRESS JOURNAL OCCUPIES FIELD NOT COVERED HERETOFORE

With reference to THE MINING CONGRESS JOURNAL, E. G. Reinert, the general manager of *The Daily Mining and Financial Record*, of Denver, has written the following:

"We are very much impressed with the real merit from a journalistic standpoint of THE MINING CONGRESS JOURNAL and congratulate you upon the good work it is doing in a field largely beyond the work of any other mining publication devoted to the mining industry. The wide range of topics covered relating to the politics and economics of mining is a most timely and useful branch of education for the benefit of mining men generally. It is both fitting and timely that the official organ of the greatest legislative organization in America devoted to a single industry, the American Mining Congress, should be sponsor for such a publication as the MINING CONGRESS JOURNAL, and the independent contemporary mining press of the country should cooperate thoroughly with its publishers."

Reports Being Delayed

A number of important reports which have been made to the Bureau of Mines are being delayed seriously due to the small amount of money available for printing.

Completing Mogollon Work

Field work will be completed early in June on a survey being made in the neighborhood of the Mogollon Mines, New Mexico.

**BUREAU OF MINES EXHIBIT
ONE OF FAIR'S FEATURES**

**Acting Director Manning Returns from Trip
to Coast—Tells of Success of
Mine Display**

**Visits Western Stations and is Encouraged
by Marked Success of Important
Work**

After a month divided between the western stations of the Bureau of Mines, Van H. Manning, acting director of the Bureau of Mines, has returned to Washington enthused with the success that is attending the work at the stations, and convinced that the bureau's exhibit at the Panama-Pacific Exposition is the banner display at that assemblage of master efforts. With reference to the exhibit, Mr. Manning said:

"'The Mine' adjunct to the Bureau of Mines exhibit, is one of the features of

the San Francisco Fair. Every day at 2 p. m. the Bureau of Mines rescue truck, with its crew, is put into service. At the glass smoke gallery the members of the crew put on their helmets and do the identical work that would be required if an explosion in an actual mine had taken place.

"The explosions attract great crowds. On one afternoon during my visit no less than 12,000 persons gathered to witness the work of the rescue crew. A man representing a victim of an explosion is carried from the mine, and first-aid treatment given him. The whole thing is so conducted as to convey vividly to the public the actual procedure in time of a mine disaster. The mine model is a clever representation of a typical underground working. Even the odor of dampness is present. It is realistic and doubtless will be a very effective means of educating the public as to the benefits accruing from this portion of the Bureau of Mines activities.



EXPERIMENTAL EXPLOSION OF COAL DUST

Showing how Bureau of Mines produces conditions of an explosion in a mine for experimental purposes.

INTEREST IN COTTRELL EXHIBIT

"The exhibit showing the Cottrell method of fume precipitation is attracting decided interest. The Merrill exhibit is of great merit.

"Splendid results are being achieved at the Salt Lake experiment station, where the low grade ores of Utah are being studied in cooperation with the University of Utah.

"Work is progressing very satisfactorily at the Denver station. To date, 754.2 milligrams of radium element have been delivered to the National Radium Institute.

"Encouraging work is resulting from the commercial development of the Rittman discoveries at Pittsburgh. The Aetna Explosives Co. is cooperating in this work, and is making extensive improvements in its plant for the handling of this work. The company is now erecting furnaces to have a capacity of 42,000 gallons of petroleum per day. The output of benzol will be approximately 3,000 gallons daily."

During Mr. Manning's absence in the West, Charles L. Parsons, the chief of the division of mining technology, was in charge of the Bureau.

Survey Correspondence Increases

Evidence of general appreciation of the work of the Geological Survey is had in the rapidly increasing amount of correspondence with those interested. This is having the effect of making the statistics considerably more accurate and aiding in the general plan of cooperation.

To Instruct Miners Gratis

Free instruction along safety-first lines, and with a view of promoting the technical efficiency of mine workers and those employed in industrial plants, is to be given in a class recently formed in connection with the Illinois Miners' and Mechanics' Institutes at O'Fallon, Illinois. Mine gases, safety lamps, ventilation of mines, explosives and surveying are included among the subjects to be discussed.

EXTENSIVE TOPOGRAPHIC WORK TO BEGIN JULY 1 IN RADIIUM ORE DISTRICT

Topographical work in the Naturita district of southwestern Colorado will be begun July 1, by the Geological Survey. Owing to the presence of radium ores in this district, the need for this survey has been pressing for some time, and it will be pushed to completion as early as practicable.

GUIDE BOOK OF WESTERN ROUTES NEARS COMPLETION

Work on the guide book to the Western United States, which is being prepared by the Geological Survey, is nearing completion. The description of the Overland route is all in type, and is expected to be completed early this month. The Northern Pacific portion of the work is also well advanced, and is in the hands of the public printer. The Santa Fe and Coast routes have been transmitted for printing.

MINING CONGRESS JOURNAL COMMENDED BY DR. HOLMES

With reference to THE MINING CONGRESS JOURNAL, Dr. J. A. Holmes, Director of the Bureau of Mines, made the following observation in a recent letter:

"I am writing to express my appreciation and my hearty commendation of the character and general make-up of the MINING CONGRESS JOURNAL. This is a thoroughly creditable publication."

Examine Oklahoma Mines

A large number of the mines on Indian lands in Oklahoma have been examined by Daniel Harrington and J. J. Rutledge, of the Bureau of Mines, in order to determine the application of the order in regard to the use of permissible explosives.

School of Mines Opens

Encouraging reports of the new Tonopah School of Mines have been received. Ellsworth R. Bennett is in charge of the work.

QUALIFIED INJUNCTION AGAINST COPPER SMELTING COMPANIES GRANTED

Supreme Court Hands Down Decision in Hard Fought Case Between State of Georgia and Tennessee Copper Company and The Ducktown Sulphur Copper and Iron Company—Stewart Mining Company Decision

Conditions under which the Tennessee Copper Co. and the Ducktown Sulphur Copper Co., Ltd., may operate their plants were laid down by the Supreme Court in a recent decision. While a qualified injunction was granted against the two mining companies, it will permit of continued operation of their plants on nearly the same scale as before.

One notable feature of the case is that the Chief Justice, Justice Holmes and Justice Hughes dissented from the opinion of the court, which was rendered by Justice McReynolds. In dissenting, Justice Hughes said: "I do not think that the evidence justifies the decree limiting production as stated."

The full opinion of the court is as follows:

Both defendants are smelting copper ores in Polk County, East Tennessee, near the Georgia line. The works of the Tennessee Company, much the larger of the two, are situated within half a mile of the line; those of the Ducktown Company are some 2 1-2 miles away. The ores contain a very large amount of sulphur—around 20 per cent.—and in the process of smelting great quantities of sulphur dioxide are formed; if allowed to escape into the air this becomes sulphurous acid, a poisonous gas destructive of plant life.

In October, 1905, the State of Georgia began this original proceeding, alleging that defendants permitted discharge from their works of noxious gases which being carried by air currents ultimately settled upon its territory and destroyed the vegetation, and asking for appropriate relief. The case was heard on the merits and the issues determined in complainant's favor, May, 1907. We then said: "If the State of Georgia adheres to its determination, there is no alternative to issuing an injunction, after allowing a reasonable time to the defendants to complete the structures that they now are building, and the efforts that they are making, to stop the fumes. The plaintiff may submit a form of decree on the coming in of this court in October next." 206 U. S. 230, 239.

Hope was entertained that some practical method of subduing the noxious fumes could be devised and by consent the time for entering a final decree was enlarged. Both companies installed purifying devices. The Tennessee Company and the State finally entered into a stipulation whereby the former undertook annually to supply a fund to compensate those injured by fumes from its works, to conduct its plant subject to inspection in specified ways, and between April 20 and October 1 not to "operate more green ore furnaces than it finds necessary to permit of operating its sulphuric acid plant at its normal full capacity." The State agreed to refrain from asking an injunction prior to October, 1916, if the stipulation was fully observed. The Ducktown Company and the State were unable to agree, and in February, 1914, the latter moved for a decree according a perpetual injunction. Consideration of the matter was postponed upon representation that conditions had materially changed since 1907, and leave was granted to present additional testimony "to relate solely to the changed conditions, if any, which may have arisen since the case was here decided." A mass of conflicting evidence has been submitted for our consideration.

The Ducktown Company has spent large sums—\$600,000 and more—since the former opinion in constructing purifying works (acid plant); and a much smaller proportion of the sulphur contained in the ores now escapes into the air as sulphur dioxide—possibly only 41½ per cent. as against 85½ per cent. under former conditions. Similar improvements have been installed by the Tennessee Company at great expense, but we are without adequate information concerning the effect produced by them. As it asked and was granted opportunity to show material changes, the burden is upon the Ducktown Company. A full and complete disclosure of the improvements installed by it and the results continuously obtained have not been presented.

Counsel maintain that escaping sulphur fumes now produce no substantial damage in Georgia, and further that if any such damage is being done the Tennessee Company alone is responsible therefor. We think the proof fails to support either branch of the defense, and the State should have a decree adequate to diminish materially the present probability of damage to its citizens.

The evidence does not disclose with accuracy the volume or true character of the fumes which are being driven off daily from the works of either company. Averages may not be relied on with confidence since improper operation for a single week or day might destroy vegetation over a large area, while the emission of great quantities of fumes during a short period would affect but slightly the average for a month or year.

It appears that in 1913 the total ores smelted by the Ducktown Company amounted to 152,249 tons, or 304,498,000 pounds—20 per cent. sulphur; total matte shipped was 12,537,000 pounds—about 4 per cent. of the ore; the total sulphur in the smelted ores not accounted for and which escaped into the air in the form of dioxide was 13,102 tons, or 26,204,000 pounds—over 2 pounds of sulphur for each pound of matte and an average of more than 35 tons per day.

During July, 1913, the total matte shipped (approximately the production) was 846,000 pounds—more was shipped in June and less in August. The July production was thus approximately 7 per cent. of the year's total. The sulphur in the fumes generated in connection with the production for this month, not redeemed by the acid plant and emitted into the air, may be fairly estimated as not less than 7 per cent. of 13,102 or 917 tons—substantially 30 tons per day. This amount produced harmful results and must be diminished.

It is impossible from the record to ascertain with certainty the reduction in the sulphur content of emitted gases necessary to render the territory of Georgia immune from injury therefrom; but adequate relief, we are disposed to think, will follow a decree restraining the Ducktown Company from continuing to operate its plant otherwise than upon the terms and conditions following: (1) It shall keep daily records showing fully and in detail the course and result of the operations. (2) A competent inspector to be appointed by this court shall have access to all the books and records of the company, shall make frequent careful observations of the conditions—at least once each fortnight—during the next six months, and at the end of that time shall make full report with appropriate recommendations. An adequate sum to cover the necessary costs and expenses must be deposited with the clerk by the company. (3) It shall not permit the escape into the air of fumes carrying more than 45 per cent. of the sulphur contained in the green ore subjected to smelting. (4) It shall not permit escape into the air of gases the total sulphur content of which shall exceed 20 tons during one day from April 10 to October 1 of each year or exceed 40 tons in one day during any other season.

The cause will be retained for further action and either party may apply hereafter for appropriate relief.

Within ten days either side may present a decree in conformity herewith, together with such suggestions as seem desirable.

IDAHO COURT UPHELD

Supreme Court Hands Down Decision in Stewart Mining Co. Case

The judgment of the lower court was affirmed by the Supreme Court in the case of the Stewart Mining Company versus the Ontario Mining Company, Stanley A. Easton and Myron A. Folsom. Extracts from the decision follow:

The contest is between the mining companies as to certain ore bodies lying beneath the surface of the mining claim of defendants, called the Ontario. Plaintiff asserts ownership to the ore bodies by reason of being owner in fee and in possession of a quartz lode mining claim named the Senator Stewart Fraction Lode Claim. The plaintiff prayed for an accounting and for an injunction against the further mining or extracting of the ore.

Defendant's answer set up opposing contentions and denied the rights alleged by plaintiff. In a cross-complaint defendants asserted title and prayed that it be quieted against the claim of plaintiffs. The judgment of the trial court responded to this prayer. The judgment was affirmed by the Supreme Court of the State.

The statute would seem to call for no effort of construction, and the distinction which obtains in the parlance of miners and in the cases, between the strike or course and the dip of a vein, is compelled by the statute and marks accurately the linear and extra-lateral rights of a location. This certainly, as far as any language can do it, expresses the distinction which must be observed, however, various may be the natural conditions. In other words, the strike and the dip of a vein must not be confounded nor the rights dependent upon them confused.

What, then, do they determine in the present case? The plaintiff asserts, as we have seen, that the vein has its top or apex within one of its claims (the Senator Stewart Fraction Lode) and asserts further that the vein extends downward beyond the side lines, within the limits of the end lines extended vertically, to and beneath the claim of defendants, and includes the ore bodies mined by the latter.

These are the facts as found by the trial court:

"That no part of the apex of the said ore bodies lies within the lines of the Senator Stewart Fraction lode mining claim.

"That the plaintiff is the owner, in the possession and entitled to the possession of the Senator Stewart Fraction lode mining claim described in the complaint, with the exception of that part thereof in conflict with the Quaker lode mining claim, which conflict is not material to any issue involved in this case.

"That within said Senator Stewart Fraction lode mining claim there is a vein or lode of mineral-bearing rock in place which on its onward course crosses the south side line of said Senator Stewart Fraction lode mining claim, and has a course about North 30° East, and the said vein on its onward course does not reach any other line of said claim. That the said vein is cut off on its onward course by a large fault near the north line of said claim, called the Osburn fault in this case. That the said vein on its downward course passes underneath the east line of said claim, which is described in the patent as the end line of said claim, which line connects Corners 1 and 2 of said claim. That the fault which cuts off said vein on its northerly end has a northwestwardly and southeastwardly course and dips southwestwardly. That the end of the vein against said fault has a course North 41° West. That the end of said vein against said fault has a steeply inclined downward course southeasterly.

"That the end of the vein as the same is terminated on the onward course of the said vein against the fault hereinbefore referred to is the end of the vein on the line of its dip, and the said vein is undercut by the said fault in such manner that if the country below the fault was eroded, it would present the appearance of an overhanging cliff.

"That the said fault which terminates the said vein upon its onward course is a fault of great magnitude, and for a short distance above the fault has disturbed and broken and slightly deformed the vein, and enclosing rocks in close proximity (proximity) to said fault in some places for a greater distance from the fault than in others. That the vein is also at various places cut by other faults which tend in places to flatten the vein somewhat upon its downward course.

"That the said vein is continuous on its onward course from the line of contact with the said great fault in this case called the Osburn fault southerly to the ore bodies within the Ontario lode mining claim and has been followed upon the level in the drifts by the miners from the said edge of the vein to the ore bodies in the Ontario mining claim.

"That the top or apex of said vein which on its onward course crosses the south side line of said claim is practically level."

The Supreme Court affirmed the findings and added that the end of the vein against the Osburn fault was "turned, curled or cupped upward, caused by the disturbance which created the fault and cut off the vein." And also said: "It further appears that this vein is undercut by the Osburn fault in such a manner that if the fault were eroded or washed away, it would leave the vein standing out as an overhanging cliff."

The next contention of plaintiff is that there is neither allegation nor proof of the discovery vein in the Senator Stewart Fraction claim but that a presumption arises from the patent that a discovery was made and the claim properly located with reference thereto.

In other words, that a discovery vein existed and that the claim was located lengthwise with it, and that the first presumption is conclusive, and the other also, in the absence of anything to the contrary appearing. And it would seem to follow from the contention that the presumption includes as well the position of the apex and other attributes necessary for the assertion of extra-lateral rights. It would, indeed, be difficult to entertain such a presumption in view of the conduct of the plaintiff, its pleadings and testimony and the careful investigation and consideration which the State courts gave to the case. We may omit, therefore, a detailed consideration of plaintiff's contention. The rights asserted in the pleadings and to which the testimony was directed to sustain were based upon the possession of the vein which we have described. *Stewart Mining Co. v. Bourne, supra.*
Judgment affirmed.

First Aid Contests

First aid contests in the Southwestern district have been held as follows: Ft. Worth, Tex., April 24; Ft. Smith, Ark., May 18; McAllister, Okla., May 22; Pittsburgh, Kan., May 25. Contests are to be held in Moberly, Mo., June 1 and in Des Moines, Iowa, June 5. The winning teams in the State meets are to meet in an interstate contest to be held in Kansas City, probably in September. The winning team in the interstate contest will be sent to the Panama Pacific Exposition. All the expenses connected with the trip to Kansas City and the trip to San Francisco will be paid by the Southwestern Coal Operators' Association and the Miners' Union.

Tabulates Accidents

In *The Anode*, published by the Anaconda Copper Mining Co., of Butte, Mont., space is being given to a detailed table of accidents. It shows the department in which the accident took place, with the names of the superintendent and the foremen. The number of accidents is placed opposite the name of each foreman. In this connection a table is carried showing the increase and reduction of accidents in the different departments.

Christmas District Mapped

The work of mapping the Christmas mining district of Arizona just has been completed by the Geological Survey.

FORTUNES IN PEAT BEING OVERLOOKED, IT IS SAID

**Prof. C. A. Davis, of Bureau of Mines, Says
Fuel Exists Commercially in Many
States**

Frequent Failure to Make Business Pay Due to Well Understood Causes

It is the belief of Prof. C. A. Davis, in charge of fuel technology for the Bureau of Mines, that peat exists in commercial quantities in many parts of the United States. He is conducting a line of experiments in the hope of convincing the public that this fuel, so extensively used in Europe, can be made a source of great profit in this country.

APPROPRIATIONS LIMITED

Investigations of this source of fuel have been handicapped greatly in this country by the very limited appropriations which have been allowed for investigation. As it is, however, an accumulating amount of evidence is being gathered to show the possibilities of this industry. There are a number of small plants in operation in Massachusetts, Maine, Michigan, Iowa and California. Most of them represent small investments and no effort has been made to produce peat on a large scale, with the consequent reduction of costs.

Prof. Davis is keeping abreast with the industry in all parts of the world. He has visited many of the peat producing centers in Europe and has given particular study to those of Russia, North Germany and Sweden.

In the light of his wide experience, Prof. Davis declares that the industry has been held back by the failures which have attended a large number of projects for exploiting this fuel. Many cases are on record where persons insufficiently experienced and with wholly inadequate capital have embarked in the peat industry. The natural result has been failure, which has tended to discourage others from undertaking similar developments. As the fuel is not generally known, the matter of finding a market and instructing the public in its

use, is necessarily preliminary work, which must not be overlooked.

IS IMPORTANT RESOURCE

Prof. Davis makes the unqualified statement that the peat deposits of the United States form one of the most important of its undeveloped resources. He expects to see this fuel receive much attention due to the increasing use of gas producing engines.

Prof. Davis is now preparing his annual report on the production of peat in 1914.

SHIPMENTS OF RADIUM FROM DENVER CONTINUE

Use of Element in Therapeutics Becoming More Effective Every Day, It is said

Another shipment of radium has been received by the Bureau of Mines from its Denver laboratory. The last shipment consists of 288.2 milligrams of radium element. This is worth \$120 per milligram.

Due to the war, the output of radium has been curtailed greatly. Apparatus of French manufacture which is necessary for crystallization cannot be secured. As a result of this, other methods of crystallization are being developed.

The war has resulted in a complete stagnation of the radium market, and prospecting has been stopped as a consequence.

Reports to the Bureau of Mines indicate that the use of radium in therapeutics is more successful every day. One cause of adverse reports, which come oftentimes from reputable physicians, is that too small quantities are used, it is believed. Where 1,000 milligrams should be employed, some experimenters form adverse conclusions if results are not obtained from the use of 5 or 10 milligrams.

Need 1,500 Miners

A need for 1,500 miners has been announced by the Consolidation Coal Co., which is opening seven mines in the Fairmont, Va., field.

ARIZONA PLATINUM CLAIMS ARE TO BE INVESTIGATED

Survey Will Examine Properties at Instance of Department of Agriculture

At the request of the Department of Agriculture, the Geological Survey is investigating a number of claims in the Grand Canyon Region of Arizona. The claims have been taken on what is alleged to be platinum and copper bearing land. The forest service is in doubt as to the existence of platinum and copper on the lands specified. It is also claimed that ulterior motives are responsible for the filing on a number of these properties.

Samples thought to contain platinum have been examined by the survey and found to contain none of the metal.

A field man of the survey will look into the matter at once.

HURTS OIL DEVELOPMENT

War Having Serious Effect on Canadian Field at Calgary

Oil development in the Calgary district of Canada has been hampered seriously by the war. The district, which is one of great promise, has been dependent to a large extent on English capital. This was especially the case owing to the encouragement given by the British Admiralty to the development of this particular field. The oil found in this district is remarkable for its high grade. The gasoline content in some wells is as much as 80 per cent.

J. H. Sinclair, formerly with the United States Geological Survey, but now located at Calgary, told heads of divisions at the survey about the field, on a recent visit.

Mr. Sinclair was with the survey from 1903 to 1908.

Work in Idaho District

Triangulation of the phosphate rock area in southeastern Idaho near the Fort Hall Indian reservation is in progress. The Geological Survey has one party looking after this work.

WAR HALTS DEVELOPMENT WORK IN URANIUM MINES

As a result of the war in Europe the Standard Chemical Co., the most active miner of uranium ore in this country, advises that its developments are practically at a standstill. Joseph M. Flannery, president of the company, in a letter to THE MINING CONGRESS JOURNAL, states that there is no doubting the value of radium in therapeutics. He considers it has been established beyond all question. The domestic demand from this source, however, is small and uncertain, and Mr. Flannery finds it impossible to predict when the business will assume larger proportions. He says that all research work on radium in Europe has been affected adversely by the war.

Michigan Appropriation Increased

An appropriation of \$65,000 has been allowed the Michigan College of mines for current expenses for the next biennium. This is the same amount appropriated for the last biennium. In addition to this, a special purpose appropriation of \$15,320 was allowed. This compares with \$9,300 received two years ago. The special purpose fund will be devoted mainly to improvements to buildings and grounds.

Allen Issues Report

What is regarded as one of the most notable productions in the history of the Michigan Geological and Biological Survey is the recent publication on "The Mineral Resources of Michigan," by R. C. Allen, the director. This work goes into salient matters with reference to metallic and non-metallic minerals. Statistics covering various phases of the copper industry are peculiarly illuminating.

Topographers Sent to Oil Field

Owing to the prospecting which is being done for oil in the Moorcraft district of Wyoming, which is just west of the Black Hills, two parties have been sent by the Geological Survey to that region to do triangulation level and topographic work.

CONTINUES WORK WITH PRECIPITATING AGENTS

Geological Survey Attaches Much Importance to Experiments on Gold and Silver Solutions

From the standpoint of the metal miner, no more important work is being done by the Geological Survey than the experiments being carried actively forward in the matter of metallic minerals which act as precipitants of gold and silver. Important results are being obtained due to this work, but it will not be announced until the experiments have been carried still further.

This work already has been the subject of several articles in *Economic Geology*.

The most recent summary of the work which has been made public is, briefly, as follows:

The mineral, maucherite, tetranickel-triarsenide (Ni_4As_3), containing the largest proportion of nickel of all nickel arsenides known, is a homogeneous substance. It appears to be rather widely distributed, for within one year it has been found on two continents.

Silver sulphate solution is an efficient solvent of pure arsenides preparatory to analysis.

In sulpharsenides, preferably called arsenosulphides, sulphur appears to functionate atomically with arsenic, the arsenosulphide group (AsS) being strongly resistant to the oxidizing action of silver salt solutions. Sulphur, therefore, may be regarded as a protector of arsenic against oxidation by silver salt solutions.

In regions abounding in deposits of native silver associated with arsenical minerals the source of the silver should be attributed to the action of arsenides rather than to arsenosulphides, such as arsenopyrite (FeAsS), and cobalt arsenosulphide (CoAsS), that is, cobaltite, on silver salt solutions.

The silver precipitation capacity of a nickel or cobalt arsenide depends on the proportional amount of arsenic uncombined with sulphur, that is, the arsenic of simple arsenides.

The study of ore enrichment involves problems the solution of which requires a knowledge of the chemical properties

of the homogeneous substances contained in many mineral mixtures, and there is much to be learned concerning the conduct of ore-forming minerals with metallic salt solutions which may come in contact with them. In future if as much attention is paid to the chemical conduct of minerals as has been directed hitherto to their total content, and to the determination of their physical properties, there is reason to believe that chemical mineralogy will become a more systematic and serviceable branch of mineralogical science than it is today.

ERRONEOUS REPORT OF COAL OPERATORS' CONFERENCE PRINTED

An error in an article in *The Chicago Tribune* dealing with the last visit of the committee of the Indiana Bituminous Coal Operators' Association made it necessary for the Department of Justice to issue a denial of certain statements made by the newspaper, with respect to the visit.

In its article, *The Tribune* stated that the Department of Justice had promised the coal operators a certain degree of immunity with respect to the formation of a joint selling agency.

Such a statement, of course, has no foundation in fact. The desires of the committee were noted with great care at the Department of Justice. Judging from the questions asked, an effort was made to understand all the details of the proposition. While evidences of a sympathetic attitude were displayed, the committee was very careful in its utterances after the conference, to explain that no promises had been given or expected.

Hoffman Writes Report

Frederick G. Hoffman, of Newark, N. J., who has given a great deal of attention to mine sanitation, is preparing a technical paper on miners' nystagnus. This paper will be published by the Bureau of Mines and distributed gratis. It probably will be six months before it will appear.

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EDITORIALS

CONTROL OF MONOPOLY VESTED IN THE PUBLIC

All effort of labor to better its condition meets the hearty sympathy and approval of all right thinking people so long as proper means are employed. Whenever lawlessness results, public opinion condemns the lawlessness, but is likely to be divided as to where the responsibility should be placed. The fact that lawlessness does result is a matter of the greatest public importance. It is vital under these conditions to discover which side of such controversy is primarily responsible.

The public desires that the laborer shall receive the highest wage which is possible without putting too great a burden upon the consumer.

To increase the fund set apart for labor to the limit of the purchasing power of the public will make for a solution of the problem of the proper distribution of wealth. Capital must have a fair profit, labor a fair wage and the consuming public a price at which it can afford to buy.

Intelligent selfishness is the basis of all true progress. When it becomes highly

specialized, if not curbed, it becomes a grave danger to other enterprises not so organized.

In spite of the many examples of philanthropic charity on the part of men who have amassed immense fortunes, it is still true that the public interest requires that a curb shall be put upon every enterprise which uses unfair means to accomplish its end. Whether the trust be one of labor or of capital, it should, if it effects a monopoly, be under strict Government control.

The Friends of Labor.

None can be a friend of his country and not be a friend of labor—not necessarily organized labor, but labor. The absolute liberty of the individual must first be protected. If the individual willingly becomes a member of organized labor, the exercise of that privilege should not prejudice his case, nor should his failure to affiliate with the union work to his detriment.

No real advantage can be brought to labor which does not benefit the country as a whole. Too high a wage results in too great production costs, too small sales, less production, and less wages, or else consumption is supplied by outside competitors and all wages are cut off. No solution will be permanent which does not consider every element in the production, transportation and exchange of labor's product. Labor cost is but one element in production.

Majority Must Rule.

It has been said that you cannot indict a whole people; while this is true, it is also true that you can indict, and you should indict, any minority which tries by lawless means to control the majority. It is more important that Government shall be maintained than that the fair demands of a minority shall be granted. In a Republican Government it is basic that the majority must rule. If a cause is right, orderly agitation on the part of the minority which sustains it, will soon make converts enough to control. Unless the majority rules there can be no such thing as Republican Government. Anarchy brings justice to no one. The

breaking down of government means anarchy. He who throws doubt upon the integrity of the courts is an enemy to Republican Government. Where the votes of the people control the Government there is no excuse for attempts to belittle the exercise of Governmental functions.

Efforts to Fix Responsibility.

For many years sporadic efforts have been made to fix responsibility for wrongs which cause labor's unrest, and to ascertain the causes which lead to violence and lawlessness in the settlement of industrial disputes. These efforts have accomplished some good, but each new outbreak has its new aspects which require a broader and more comprehensive investigation, in order that the whole situation may be covered.

Commission on Industrial Relations

Congress, in recognition of this need, enacted a bill creating a Commission on Industrial Relations, providing for an exhaustive investigation covering a three years' period, at the end of which the Commission was to report to Congress the results of its investigations, and such recommendations as seemed best adapted to better industrial conditions.

Under the provisions of the law a Commission was appointed to which the public looked for an impartial, unbiased investigation, and that through its recommendations the waste, bitterness and bloodshed which have been the startling features of many industrial disputes, might be avoided.

Mr. Walsh Should Resign.

A broad judicial investigation was provided for by Congress. The public treasury is paying for such investigation. Very unfortunately the public mind is being forced to the conclusion that this great opportunity for public good is being prostituted to gratify the personal vanity or the selfish ambition of the chairman of this Commission. Many of its hearings have taken on the aspect of a police court prosecution with the court itself acting as the public prosecutor. Witnesses representing the labor side of

these controversies have been treated with that courtesy which should be accorded all witnesses, while those who have not agreed with the chairman's conclusions have been subjected to severe cross-examination, and cunning efforts made to discredit their testimony.

The Commission, under the law, was purposely made up of six partisans—three to represent labor and three to represent the employers of labor. Partisanship from these is essential and expected. Special bias on the part of the chairman will necessarily create distrust in the findings of the Commission and serve to destroy its influence for public good. Mr. Walsh unfortunately does not realize his opportunity, and regarding himself as a partisan member of the commission, has put an end to all hope that the Commission will meet its high responsibilities.

The problems involved require judicial temperament and painstaking investigation. The chairman of the Commission on Industrial Relations finding himself unable to meet these requirements should resign from the Commission for the public good.

Cooperation and the Sherman Law

Much of encouragement has come to coal operators through the friendly reception given to the representatives of the coal industry by the Federal Trade Commission, by the Department of Justice and by the friendly letter of President Wilson. These indicate a material change in public sentiment from the days when anything which savored of combination was *per se* reprehensible. The old view was entirely proper in the days when primitive methods were sufficient to accomplish business success—when really large capital was unknown to the business world.

These were the days of extremely high prices for luxuries and most manufactured products and extremely low prices for the product of the farm and for many of the real necessities of life, and particularly low wages for labor.

These were the days when the more wealthy could not enjoy many of the luxuries which are now considered necessities by the great mass of our people of today.

The evolution of production, the great decrease in cost of articles of which the raw materials and the labor cost has been largely increased, brought about partly by invention and partly by operations so large as to accomplish complete cooperation in a single unit—has wrought a marvelous but almost unconscious change—a change which requires cooperation of the smaller units or their extinction.

There must not be so much of cooperation as to put undue burden on the consumer, nor so great competition as to annihilate the smaller producer. These conditions should be accomplished with the least possible Governmental interference with the freedom of business operation. Notwithstanding the encouragement received at Washington and the more enlightened public thought with reference to cooperation in business life, it must not be forgotten that the Sherman Anti-Trust Law is still on the Statute books, that it is still a very potent factor for the prevention of monopoly and that the public mind, having enabled itself to discriminate between good and bad combinations, is disposed to punish the bad with greater severity than ever before.

CALL FOR EIGHTEENTH CONVENTION IS ISSUED

The official call for the eighteenth annual session of The American Mining Congress to be held in San Francisco, Cal., September 20, 21 and 22, 1915, appears elsewhere in this issue. We ask the special attention of our members to this call, and suggestions as to what subjects can be discussed with greatest advantage at this convention.

Heretofore Mining Congress sessions have lasted for five days, and usually three sessions have been held daily. The officials of the Congress, believing that the desire of members to see the Exposition will make difficult the holding together of a large convention for the discussion of abstract subjects, are proposing to limit the sessions and to arrange for the expeditious conduct of the necessary work of the convention.

All set papers must be in the hands of the secretary in time to have them printed and ready for distribution either before or at the convention. Written discussion of the set papers will be welcomed, as well as discussion from the floor, upon the subjects presented for consideration.

INCREASES THE FIELD FOR TECHNICAL MEN

At the time the formation of the Bureau of Mines was being discussed, some opposition to the proposed Governmental activities came from some consulting engineers. It was their fear that the Bureau of Mines would encroach on the field of private activities.

The Bureau has now been in operation sufficiently long to prove beyond question how groundless were these fears. Instead of limiting the field of the consulting engineer, the Bureau of Mines is continually increasing the opportunities for the use of consulting engineers.

This is especially true in coal mines. Only a few years ago the technical man was not regarded with favor in the coal mining districts. It was considered that the extraction of coal was a prosaic question of brawn and required little else but muscle. Even foremen and superintendents possessed of "book learning" were regarded with suspicion. The remarkable change which has taken place during recent years can be understood only by those who have a comprehensive recollection of conditions as they previously existed. That the Bureau of Mines has played its part in this problem can not be disputed.

Even the Safety Engineer, who only recently was considered as a superfluity and by some a parasite, has been able to prove his value in dollars and cents.

IMPORTANT PROFESSIONAL PAPER DELAYED SERIOUSLY

The recent publication by the U. S. Geological Survey of Professional Paper 87, on the geology and ore deposit of Copper Mountain and Kasaan Peninsula, Alaska, the investigations for which were

made in 1907 by Mr. Chas. W. Wright, calls attention to two subjects of importance.

Dr. Brooks, in the preface of this paper, explains the reasons for the long delay in its publication. First, that Mr. Wright, before completing his report, left the Government service to go into private practice, and that in consequence the report was not finished until 1912. A still further delay has been caused by lack of sufficient funds to pay for the cost of printing.

It would seem that professional ethics would require that having undertaken an important piece of work, an obligation was thereby created to finish it in time to be of service to those for whom the work was done. Mr. Wright may have felt justified in leaving this work partially completed, but the public which pays for it would seem to have ample cause for criticism. While it may be justifiable to use Government employment as a stepping-stone to better positions, it surely cannot be right to abandon a professional undertaking in such a way as to destroy its particular value to the Government.

Mr. Wright made the investigation in 1907 and in September, 1912, submitted his report. Because of a lack of funds this valuable publication has been kept even further from its real use. It may not be amiss to remind Congress that such economy makes for the grossest extravagance.

PRIVATE ENTERPRISE DOES NOT GET ALL ABLE MEN

While there are a number of able men in the Federal service being drawn out of the work by private enterprise, it is not the case that all men who develop unusual ability in the Government service are lost in this manner. The very nature of technical work tends to eliminate the individual. For the most part, it is prosaic and devoid of unusual features which draw attention to the individual workers. There are scores of men with unusual gifts whose names are unknown outside of their bureaus. They work quietly ahead, contributing greatly

to the remarkable work that the Government is doing in behalf of science and industry.

On July 1 the Government will lose a man of the most decided ability in the person of Edward W. Parker, of the Geological Survey. His services to the Government have been of exceptional value. The anthracite coal companies did not select him as the head of their new educational bureau without carefully weighing his ability against that of many other able men.

Despite his very valuable services, there are men in the survey who can slip quietly into Mr. Parker's chair and carry on his work from the point he leaves it, without noticeable change in the output of the division.

It can be said, however, that there would be an alarming number of Federal employes taken into private business if their real merit could become known generally.

WOMEN AND CHILDREN REAL VICTIMS OF OHIO STRIKE

A sigh of relief was heaved throughout a broad expanse of the coal producing country when the wage scale in the Ohio district was signed last week. It is regrettable that the wearing-down process had to be resorted to before this difference could be settled. Forty-five thousand persons, counting women and children, have suffered directly to a more or less extent as a result of this controversy.

The strike promised to last even longer than it did. We are very glad that its termination came more speedily than was expected, but it seems such a useless outpouring of energy to have had to strike at all.

As in all such struggles, the greatest sufferers are the women and children. We hope that Ohio never again will be called upon to stage such a regrettable occurrence.

Feldspar and mica deposits of Florida are treated fully in a report just out by S. W. McCallie, the State geologist of Georgia.

LITTLE CHANCE FOR LABOR SHORTAGE THIS FALL SAYS DEPARTMENT OF LABOR

Fear has been expressed in some quarters that the war in Europe would cause a labor shortage in the mining districts. The fact that mining operations promise to be restricted during the summer probably will result in an unusual demand for miners when the fall rush begins. In this connection, it is pointed out, that a large number of miners have returned to Europe to comply with their military obligations and that immigration has fallen off decidedly.

At the Department of Labor it is stated that there is no ground for apprehensions of these kinds. There are sufficient miners in this country, if properly distributed, to handle the probable output of coal this fall, it is asserted. It is also pointed out that the immigration of miners has not ceased. There has been a decided decrease, but arrivals are more than offsetting departures. Had facilities for the return of Austrians and Hungarians been better there doubtless would have been a much larger exodus of miners. The only military reservists who could return to their countries are those of the allies and the neutral nations. These nations, with the exception of Italy, contribute few workmen to American mines. While the Italians have been free to return, they have not shown any great desire to return to their native land.

The latest complete figures of immigration are those of March. In that month there were 19,263 immigrant aliens admitted. Of this number 11,549 were males. Natives of Southern Italy were the most numerous. They totaled 3,118. A large percentage of them were miners. The trend of immigration is shown by the numbers of arrivals from foreign countries. During March arrivals were as follows: English, 2,243; Scandinavian, 1,885; Greek, 1,488; Irish, 1,097; Mexican, 996; German, 928; French, 820; Spanish, 435; Bulgarian, 316.

Issues New Reports

Two publications have just been issued by the Wisconsin Geological and Natural History Survey. One is a study of the methods of mine valuation and assessment with special reference to the Zinc mines of southwestern Wisconsin. It is by W. L. Uglow. The Polyporaceae of Wisconsin is the subject of a report by J. J. Neuman.

FRANKLIN COUNTY OPERATORS CALL ON TRADE COMMISSION

**Details of Conference Will Not Be Made
Public at this Time—Sympathetic
Hearing Accorded**

While no definite results followed the visit to Washington of the representatives of the Franklin Center (Ill.) Coal Operators' Association, they had a satisfactory conference with the members of the Federal Trade Commission.

The committee was composed of C. M. Moderell, president United Coal Mining Co., Chicago; D. W. Buchanan, president Old Ben Mining Corp., Chicago; Herbert H. Taylor, president The Taylor Coal Co., Chicago; C. A. Bickett, president Bickett Coal & Coke Co., Chicago; Joseph P. Rend, vice-president W. P. Rend Collieries Co., Chicago; Dr. F. C. Hannold, secretary Franklin County Coal Operators' Association, Chicago; Ralph Crows, Esq., attorney, Chicago.

At the offices of the Federal Trade Commission it was stated that for the present the details of the discussion would not be made public.

It is understood, however, that the commission listened with sympathy to a proposal on the part of the operators to establish a bureau of information, which would report on volume of the sales, tonnage and prices. The bureau also will attempt to maintain friendly relations between the operators subscribing to it.

Correspondence Made Public

Correspondence, with regard to the proposal of the Indiana operators to establish a joint selling agency, which passed between the President and J. F. Callbreath, secretary of The American Mining Congress, has been published extensively during recent weeks in the coal publications. This correspondence was made public at the request of The American Mining Congress after permission to do so had been obtained from the White House.

Survey Coal District

Work on a survey of the Cholane coal district of California is being completed.

COAL CAR DEMURRAGE, PENDING OPENING OF LAKE NAVIGATION, AGAIN UP

Pittsburgh and Ohio Mining Company Brings Case Against Baltimore & Ohio Before Interstate Commerce Commission—Increase in Rates From Wyoming and Utah Mines Denied—Other Traffic News.

Demurrage charges on lake coal, which is the basis of annual friction between the coal mining companies and the carriers is made the basis of a complaint filed with the Interstate Commerce Commission by the Pittsburgh & Ohio Mining Co. and the Jamison Coal & Coke Co. The complaint is brought against the B. & O. Railroad Co. The mining companies, in their complaint, state that the B. & O. filed with the Interstate Commerce Commission its local freight tariff naming car demurrage rules and charges applied on lake coal, vessel fuel or coke held for trans-shipment at Cleveland, Loraine, Sandusky, Fair Port and Fair Port Harbor, effective April 15, 1913. This tariff sets forth that the rules and changes named are effective each year from April 15 to December 31, inclusive. The tariff provides that during the period between these dates demurrage charges at the rate of \$1 per car are to be imposed on all cars held at the ports mentioned, subject to an allowance of five days free time per car.

OBJECT TO DATE

The complainants declare that the provisions of the tariff are unjust, unreasonable and discriminatory. In particular, they attack the provision making the tariff effective April 15 of each year.

In this connection it is stated that for many years past it has been the custom of the carriers transporting bituminous coal to the lake ports for trans-shipment to points beyond, to establish each year as the effective date of their demurrage tariffs a date which is not earlier, and usually a few days later, than the date on which navigation on the Great Lakes is declared to be opened for the season. A long standing custom and practice determines that navigation on the Great Lakes is open when the waters are sufficiently free from ice to permit the movement of a vessel from Lake Erie ports to the head of Lake Superior. It is stated further that lake navigation does not open until the last days

of April and that unusual delays and difficulties always are experienced in the movement of boats intended to be used for the loading of coal at that time.

OPENED APRIL 25 LAST YEAR

Public records show that navigation was not opened in the spring of 1914 until April 25. The canal of Sault Saint Marie was not used by any boat prior to April 23.

The mining companies also point out that in the spring of 1914 other causes beyond their control made it impossible to secure boats prior to May 1. One of these causes was the Government inspection which has to be made of vessels on the Great Lakes prior to their sailing. A strike of tug-boat men at Buffalo greatly delayed matters at that port. Storms prevailed immediately after the opening of navigation in the spring of 1915, which hampered the movement of vessels intended for the loading of coal.

It is pointed out that a tariff by the respondents for 1912 provided that the demurrage rules should not become effective prior to May 15 of that year. Subsequent to the close of navigation in 1914 the respondent cancelled its demurrage tariff, and on March 16, 1915 published a new tariff which did not become effective until May 1, 1915, thus establishing, according to the complainants, the effective date for the current year May 1 instead of April 15.

DISCRIMINATION ALLEGED

During April, 1914, the Jamison Coal & Coke Co. shipped from points on the lines of the respondent and via its rails, large quantities of bituminous coal, consigned to its selling agent, the Pittsburgh & Ohio Mining Co. at Loraine, Ohio, for trans-shipment via lake to points beyond. Owing to the fact that lake navigation was not open on April 15, and owing to the other causes mentioned, the complainants were unable, prior to May 1, 1914, to secure vessels in which to transport the greater part of the coal which arrived at Loraine prior to May 1. As a result, cars containing lake coal, vessel fuel and coke were held for trans-shipment at Loraine. Demurrage charges aggregating \$4,231.00 accrued prior to May 1. The complainants have refused to pay this bill for demurrage, and point out that they must compete with coal producers who ship

over railroads whose demurrage tariffs do not become effective until May 1. This constitutes unjust discrimination, the complainants say.

IRON CASE DECIDED

Ruling Rendered in Matter Brought Up by Iron Mining Companies

A decision in the case of the Newport Mining Co., et al., vs. The Chicago & Northwestern Railroad Co., et al., was the subject of a recent decision by the Commission. A number of mining companies operating iron mines in the northern peninsula of Michigan joined in the case. The defendants are carriers whose lines serve the mines. The salient features of the decision are as follows:

The carriers serving mines in the Michigan peninsula simultaneously filed supplementary tariffs separating their charge on ore traffic and applying a 5-cent per gross ton additional charge for dock service, but keeping in effect the old rate which then applied only for the service of assembling and line haul up to dockyard. The Commission holds that the effect of this change is to increase the rate of service formerly performed at a lower rate and the burden is on the carriers to justify the increased total charges.

In judging the reasonableness of a rate in territory served by several carriers the line most favorably situated with respect to earnings, traffic, and operations will not alone be considered; and, conversely, consideration will not be confined to the line of poorest earnings, traffic conditions, etc.

When discrimination is claimed as a ground for disturbing a blanket rate it must be shown that the discrimination resulting is unlawful; *i. e.*, that one shipper or class of shippers is damaged thereby and that another shipper or class of shippers is correspondingly benefited.

The increased charges are found to be justified, and complaints dismissed.

PETITION GRANTED

Pennsylvania Company Allowed to Apply Rates Via New Ratings

Among the important Fourth Section orders issued last month were three affecting the transportation of coal in Pennsylvania. The Pennsylvania Company was authorized to establish rates on bituminous coal from Wehrum, Pa. to Buffalo and Black Rock, N. Y. via Blairsville and Kiskiminetas Junction,

the same as rates concurrently in effect on like traffic from the same point of origin to the same destination via the Buffalo, Rochester & Pittsburgh Railroad and its connections, and to maintain higher rates at intermediate points, provided they shall not exceed the rate from Wehrum to Buffalo by more than 15 cents per ton, and that the present rates for intermediate points are not exceeded.

A similar order covering the transportation of bituminous coal from Ritter, Pa. to Buffalo, Lackawanna & Black Rock, N. Y., via the B. R. & P. The intermediate rates must not exceed the through rate by more than 10 cents per ton.

The third order covers shipments from Wheatfield, Dilltown, Brendlinger, Kiskiminetas, Colliery No. 2 at Scott Glen, Scott Glen, Claghorn, Heshbon, Auld Run Colliery, Bells Mills Coal Co., Josephine Colliery No. 1 and Josephine, Pa., to Buffalo, Lackawanna and Black Rock, N. Y., via Blairsville and Kiskiminetas Junction, the same as rates via the B. R. & P. Present rates to intermediate points are not to be exceeded.

MESABI IRON ORE RATE

HELD TO BE UNREASONABLE

In the matter of rates, practices, rules and regulations governing the transportation of iron ore, the commission has ruled that the existing rate of 60 cents per long ton for the transportation of iron ore from mines on the Mesabi Range in Minnesota to vessels at Two Harbors, Minn.; Duluth, Minn., and Alton Bay, Wis., to be unreasonable. A rate not exceeding 55 cents was prescribed for the issue. No finding was made with respect to rates from mines on the Vermillion and Cuyuna Ranges.

RATES SPECIFIED

Decision Rendered in Campbell's Creek Coal Case

A situation of considerable interest to West Virginia coal mining interests is the decision of the Commission following the rehearing of the case of the Camp-

bell's Creek Coal Company vs. Ann Arbor Railroad Company, et al.

The Commission held that through routes and joint rates should be established for the transportation of coal from points on the line of the Campbell's Creek Railroad to certain interstate destinations and such joint rates should not exceed the main line or district rates now applied from points on the lines of the Coal and Coke and the Kanawah & West Virginia railroads to the same destinations.

FOUND UNREASONABLE

Rate on Coke From Geneva, N. Y., to Brooklyn Subject of Ruling

In the case of the Parkinson Coke & Coal Co. v. the New York Central & Hudson River Railroad, the commission ruled that the carload rate on coke from Geneva, N. Y., to Brooklyn is unreasonable. Reparation was awarded.

In the matter of coal rates from New Mexico mines, the commission ordered that the Atchison, Topeka & Santa Fe Railroad Co. and its connections be authorized to continue rates on coal from Gallup, N. Mex., to certain points in California, at the same rates concurrently in effect on like traffic to the same points from Castle Gate, Utah. It was provided that the new rates must not exceed rates to intermediate points.

Hearing Dates Set

Hearings of interest to miners have been arranged as follows by the commission: June 5—Joplin; Examiner LaRoe, Picher Lead Co. v. St. Louis & San Francisco Railroad. June 11—Denver; Examiner LaRoe, Huerfano Coal Co. v. California & Southern Railroad. June 14—Phoenix, Ariz.; Examiner Mackley, Petroleum to Arizona points. June 15—Denver, Examiner LaRoe, Southern Carron Coal Co. v. C. W. & E. Co.

Gold Stamp Wins Case

A rate of \$1.23 collected on mining machinery from Nighthawk, Wash., via an international route to Seattle, has

been found to be unreasonable by the Commission. Reparation was ordered paid. The case was brought by the Gold Stamp Mining Co., of Seattle, against the Great Northern Railroad.

Salt Lake Hearing Set

A hearing in the case of the Consolidated Fuel Co. v. The Atchison, Topeka & Santa Fe R. R., will be held in Salt Lake City June 30, before Examiner Mackley.

Suspended Until September 7

Proposed increases of rates on coal from St. Charles, Va., to various points north of the Ohio River have been suspended until September 7.

Increases Denied

Application for certain increases of rates on coal from mines in Wyoming and Utah to California points have been denied by the Commission.

Applications Denied

Application on the part of carriers to increase coal rates from Wyoming and Utah mines has been denied by the commission. The same ruling was made with respect to an application affecting coal from Colorado and Utah points.

Tidewater Rates Suspended

Proposed coal rates from Taylor, Pa., and other points to Tidewater, at New York, have been suspended until November 1.

Case Ordered Reopened

The Commission has ordered the reopening of the case of the Wisconsin Coal Co. vs. the Pere Marquette.

Dilltown Company Complains

A complaint has been filed by the Dilltown Smokeless Coal Co. against the Buffalo, Rochester & Pittsburgh Railroad, in which it is alleged that the carrier refuses to furnish cars on the company's private side track.

Hearings Assigned

Hearings have been assigned by the Commission in the following cases: Knoxville, Tenn., July 6, before Examiner Kelly, rates on coal to Redwing, Minn.

Frankfort, Ky., July 15, before Examiner Kelly, coal to Kentucky points.

Chicago, July 21, before Examiner Kelly, coal from Toluca, Ill.

Philadelphia, July 22, before Examiner Burnside, Consolidated Coal Co. vs. the B. & O. Railroad.

COMMENTS ON RESPONSIBILITY OF LABOR ORGANIZATIONS

Counsel of National Erectors' Association Points Out Unfairness of Laws As They Stand

Labor unions and their responsibility under the law is the subject of the following comment by Walter Drew, counsel for the National Erectors' Association. In part, Mr. Drew says:

"It will interest you to know that as a matter of law a union cannot be sued and damages recovered from its treasury for unlawful injuries which it may inflict upon others through the boycott or other form of tort. This lack of responsibility on the part of the union for its acts was the reason why action in the first instance was begun against the individual members of the Hatters' Union rather than against the union itself. The structural iron workers destroyed property to the value of a million or more by means of explosions. The evidence is overwhelming and accessible that these explosions were planned by the officials of the union and paid for out of the union treasury through the vote of the executive board, yet those whose property was thus unlawfully destroyed have no action for damages against the union and no way to reach the treasury of that union. In other words, the union with its extensive organization and the funds in its treasury has untold power for inflicting unlawful injury upon others, but with no

corresponding legal responsibility for the injury thus inflicted.

"The individual members of the union who are shown to have participated in the unlawful acts can be joined as defendants in an action for damages, but what is an action against the hundreds of individual members of a union worth for practical purposes? This power and this lack of corresponding legal responsibility for its exercise directly encourage the reckless and unlawful invasion of the rights of others by union leaders and is in large measure responsible for many of the excesses of present-day unionism.

"In addition to this large measure of immunity from legal liability, Mr. Gompers and his followers are insisting upon a further extension of the privileges and immunities of organized labor. They demand that in addition to the immunity of the union itself from legal liability for unlawful injury to others, the individual members of the union shall, by act of law, be made exempt from the preventive action of the writ of injunction. In other words, they ask to be put in a position where they cannot be prevented from inflicting injury upon others, for which injury, once inflicted, they know their organizations cannot be held responsible under the law as it now stands."

Published in New York

The Engineering Index for 1914, which was referred to in the last issue of THE MINING CONGRESS JOURNAL, is published by the Engineering Magazine Co., of 140 Nassau Street, New York, and not by the Engineering Magazine Co., of London, as stated.

Eades Leaves for Alaska

Chairman Eades, of the Alaskan Railway Commission, left last month for Alaska. He will maintain an office in the future at Seward, Alaska. Lieut. Frederick Meers, of the commission, will have his headquarters at Ship Creek, while Thomas Riggs, Jr., will have his headquarters at Fairbanks.

SWEEPING AMENDMENTS TO ILLINOIS MINING LAWS ARE PROPOSED

Senator Hull Would Make Important Changes in State Mine Inspection—Workmen's Compensation Act Amendments Also Are Proposed—Effort Made to Eliminate Incompetent Workmen from Mines

Illinois

Senate Bill No. 373, introduced by Mr. Hull. This bill provided for the amendment of existing laws relating to coal mining. It provides that the State mining board shall appoint twelve State mine inspectors. Each of the twelve districts is to have an inspector. Each inspector is to furnish bond in the sum of \$5,000. The State mining board is to furnish each inspector an anemometer, a safety lamp and other instruments needed in his work. Inspectors are to devote their entire time to their offices. Inspectors are to make personal examinations of each mine in the State every six months. The bill provides for the scope of the examination. Authority is given the inspectors to enter any mine by day or night, but they are forbidden to obstruct or hinder the working of the mine unreasonably.

PRECAUTIONS PROVIDED

The inspector is instructed to place at the top of each mine inspected by him a plain statement of what, in his judgment, is necessary for the better protection of the lives and health of persons employed in the mine. He is also instructed to put a notice at the landing used by the men, stating what number of men will be permitted to ride on the cage, and one stating the rate of speed at which men may be hoisted and lowered on the cages. The inspectors are made ex-officio sealers of weights and measures in their respective districts, and are empowered to test all scales used to weigh coal at coal mines. The bill also provides for test weights, inspectors annual reports and their publication.

Each coal operator is required to make an annual report. The report must be finished within thirty days after June 30 of each year. It is to be made to the State mine operator of the district, on blanks which will be furnished. The report is to include statistics of wages and conditions of employees. Any coal operator failing to furnish the statistics required is to be subject to a fine of \$100.

AMENDS COMPENSATION ACT

Senate Bill No. 376, by Mr. Swanson. This bill provides for the amendment of the workmen's compensation law. Section 29 of the act is amended to read as follows:

Where an injury or death for which com-

pensation is payable by the employer under and by virtue of the provisions of this Act was caused under circumstances creating a legal liability for damages in some person other than the employer to pay damages, the existence of a right in the employee to receive or recover such compensation from the employer shall not operate as a bar to an action by the employee against such other person for damages, nor be regarded as establishing or fixing the measure thereof. However, in the event that the employee shall receive or recover from such other person a sum equivalent to or greater than the total amount of compensation for which the employer is liable in the premises, the employer shall be released thereby from the obligation to pay such compensation. If, however, the sum so received from such other person is less than the total amount of compensation for which the employer is liable as aforesaid, the employer shall be liable only for the difference between the amount so received from such other person and the amount for which the employer is so liable. If the employer shall, within sixty days after the date of such injury or death, or as soon as practicable thereafter, or at any time prior to the payment of any sum of money to the employee by such other person so liable, serve a written notice upon such other person informing such other person that compensation has been paid or is payable to the employee by the employer on account of said injury or death, the employer shall thereafter be entitled to receive or recover from such other person a sum equivalent to the amount of compensation payments which the employer has theretofore paid or which the employer is liable to pay to the employee in the premises. Any sum of money so received or recovered by the employer from such other person on account of such compensation shall be deducted by such other person from any amount recovered by the employee against such other person in an action for damages on account of such injury or death. The word "employee" wherever used in this section shall be held to include the personal representatives and beneficiaries of the deceased employee, the words "person other than the employer" and "other person" wherever used in this section shall be held to include a firm or corporation, and the word "compensation" wherever used in this section shall be held to include the medical, surgical and burial expenses provided for in this Act.

A further amendment provides for the acquitting of the employer if settlement has been made with the widow and her written receipt therefor is received. Another amendment to the same Act specifies in greater detail action that may be taken by an employee if the employer neglects, fails or refuses to pay compensations.

WOULD ELIMINATE INCOMPETENTS

Senate Bill No. 478, introduced by the committee on Labor, Mines and Mining. This bill provides for the amending of the law as to the safety of persons employed in and about coal mines, and for the examination of persons seeking employment therein, in order that only competent persons may be employed as miners. The amendment provides for conditions under which certificates of competency may be issued. It also provides for a complete record of the proceedings and acts of the miners' examining board. Provides for office room and other equipment necessary. The commissioners are authorized to receive remuneration for traveling and expenses contracted in the discharge of their duties. It also is provided that public notice shall be given of examinations to be conducted by the board.

SEEKS TO LESSEN FIRE RISK

Senate Bill No. 480, introduced by the committee on Labor, Mines and Mining. This bill provides for the amendment of the act requiring fire fighting equipment and other means for prevention and controlling of fires, and the prevention of loss of life from fires in coal mines. The amendments provide for more sufficient fire fighting apparatus underground. It makes underground connections with stand-pipes or surface bodies of water, and the presence of chemical fire extinguishers in the mines. Certain amounts of fire-proof construction in shafts, drifts, and slopes are provided. The location of staples underground are designated.

FINAL SURVEY REQUIRED

Senate Bill No. 482, introduced by the committee on Labor, Mines and Mining. This bill provides for the issue of certificates in connection with mining and goes into detail as to the requirements for inspectors, mine engineers, hoisting engineers, and mine examiners. It provides for the preservation of all examination papers and all records of the State mining board. It is made unlawful to employ other than certified persons, with the exception of a twenty-three day limit which is provided under certain conditions. It is also provided that when any coal mine has worked out or is about to be worked out, abandoned or closed indefinitely, the operator shall make a final survey of the mine. This survey must show the entire worked out area.

The shaft, slope, or drift, opening into any abandoned mine is required to be kept securely enclosed. The amendment also has to do with the places of egress, stairways and cages, passageways to escapement, connections with adjacent mines, gates and landings, lights on landings, hoisting equipment, brakes on trucks, rope fastenings, signals, safety-valves, inspection of boilers, and coroner's inquest.

MINE INSPECTION COMMISSION

House Bill No. 860, introduced by Mr. Turnbaugh. This bill provides for the establishment of a mine inspection commission. The commission is to consist of three coal mine owners and of three coal miners appointed by the Governor, together with three qualified men, no one of whom shall be identified or affiliated with the interests of either the mine owners or coal miners, or dependent upon the patronage or good will of either. None of the three qualified men to be actively interested in politics. Each member of the commission is to have equal authority, power and voting strength, in considering and acting upon matters which may be brought to the attention of the commission. The commission is granted full powers to make testimony on matters within its jurisdiction.

KANSAS

A bill, prepared by the committee on mines and mining, has been introduced in the two branches of the legislature, providing for a State bureau of mines to be composed of three members, one to be chosen by the miners and one by the operators, the Secretary of State to be the third member, and to have charge of calling meetings. One mine inspector and five deputies are to be appointed by the members of the bureau.

The bureau is also made an arbitration board and is given authority to issue certificates to inside overseers and pit bosses. The bill was drawn up after consideration by the committee on mines and mining of two mine inspection measures introduced under the direction of the labor organizations.

TEAPOT DOME RESERVATION APPROVED BY PRESIDENT

The President has approved the Navy fuel oil reserve of Teapot Dome, Wyo. This reservation is composed of 10,000 acres. No drilling has been done in this region, but expert oil men believe it is valuable oil land. Two other reserves have been taken by the Navy in the heart of the San Joaquin Valley in California.

RECENT LEGAL DECISIONS; OHIO'S "RUN OF MINE" LAW EXPLAINED

Anti-Screen Law Not Unconstitutional, it is Decided in Case of Rail and River Coal Company versus Ohio Industrial Commission - Transfer of Title Defined in Arizona Case.

The objects of the Ohio "run of mine" or anti-screen coal mine law of 1914 were to eliminate the objections to the "run of mine" basis of payment to miners and to enact a system fair alike to employer and miner. The first section provides for the payment of the miners according to the total weight of coal in a mine car as removed from the mine, with the percentage of impurities to be determined by the industrial commission of the State; and operators, under the provisions of the second section, are not obliged to compensate miners for everything sent out in mine cars, but the percentage of impurities as determined by the industrial commission is to be excluded from the calculation; and while the industrial commission is authorized to determine the percentage of impurities and enforce its orders relating thereto, yet the ascertainment of the commission is not a limitation upon the right of the operators and miners to agree upon deductions of their own arrangements as to the amount of slate, sulphur, rock or dirt, and they may substitute their own agreement in that respect instead of that of the commission. The law does not prevent the operators from screening their coal as they see fit for other purposes and fit it for market in such wise as they may deem advisable; but the provision for screening is for the purpose only of calculating the amount to be paid miners for mining coal. The statute does not make the orders of the industrial commission final or conclusive, but makes them only *prima facie* reasonable, and operators are entitled upon petition to a hearing upon the reasonableness of any order and are given the right to bring an action in the supreme court to test the reasonableness or validity of any such order. The statute is not unconstitutional as unduly abridging the freedom of contract in prescribing the particular method of compensation to be paid by operators to miners for the production of coal, under the constitution of Ohio which provides that laws may be passed "for the regulation of methods of mining, weighing, measuring and marketing coal, oil, gas and other minerals."

Rail & River Coal Co. v. Yaple (Ohio Industrial Commission), 236 U. S. 338, p. 345.

TRANSFER DEFINED

The owner of certain mining locations, and holding options to purchase other mines, entered into a contract with a corporation by which in consideration of the assignment of the capital stock of the corporation he promised and agreed to transfer such mining locations and options to the corporation and when pursuant to such

contract the corporation did assign to him its shares of the capital stock, the property in the mining locations and in the options will be deemed to have passed to the corporation, under the rule that equity will regard that as actually done which ought to have been done, and the person so receiving the shares of stock can not thereafter transfer a valid title to the mining locations and to the options to another corporation with notice and knowledge of the agreement, and of the fact that the stock had been transferred; and the contracting corporation may compel a conveyance of the mining locations and the transfer of the options by the corporation or person so receiving the same.

Cerro Cobre Development Co. v. Duvall (Arizona), 147 Pacific, 695, p. 699, March, 1915.

NO DEFENSE

Where shares of stock of a mining corporation were issued and delivered to a person in consideration that he finance the corporation and advance money for the working of its mines, it is no defense in an action against him for a breach of the agreement to show that he had contracted with and paid a third person to furnish the money and that such third person had failed to do so.

Cerro Cobre Development Co. v. Duvall (Arizona), 147 Pacific, 695, p. 699, March, 1915.

REASSESSMENT

The legislature of Oklahoma may provide for a reassessment of property of public service corporations which has been assessed at less than its fair value, but in the absence of any such provision the State Board of Equalization has no power to do so; and where the state board has assessed property of all public service corporations and has equalized the various county assessments and computed the amount of the State levy and caused the same to be certified to the several county clerks, it is then without jurisdiction of authority to reconvene and reassess such property, and prohibition will lie and is the proper remedy to restrain the state board from so doing.

Prairie Oil & Gas Co. v. Cruce (Oklahoma), 147 Pacific, 152, March, 1915.

ASSUMPTION OF RISK

Assumption of risk is a matter of implied contract and an employee may be held to have assumed a risk, though his own act in proceeding in the face of danger would not constitute negligence on his part; but the employer's promise to repair a defect operates as a suspen-

sion of the employee's implied contract to bear the risk, and puts the obligation on the operator to bear the risk during the period covered by his promise. Accordingly where a pit boss promised a miner on Saturday to have a defective track repaired before Monday, the miner on returning to his work on Monday morning was justified in relying upon the promise of the pit boss and in believing that the defect had been repaired as promised.

El Paso County Land & Fuel Co. v. Perdaris, (Colorado), 147 Pacific, 675, p. 677, April, 1915.

NO LIABILITY IMPOSED

An oil and gas lease providing that the lessee shall deliver to the credit of the lessor free of cost in a pipe line, one-eighth part of all the oil produced and saved from the leased premises and pay \$300 per year for the gas from each and every gas well drilled on the premises, must be interpreted in the light of all the facts and circumstances surrounding the parties, their relation to each other, the objects and purposes of entering into the contract; and the term "gas well" as used in the contract must be taken to mean a gas well, which considering its location with reference to any market for gas, its capacity as a gas producer, that it can be profitably operated as such, and not a well producing oil in large quantities and some gas and operated by the lessee for many years as an oil well, and without demand for gas rental by the lessor. And the fact that some gas is found in a well and is run from the casing head into a gas line from wells on an adjoining lease by the lessee, and the gas from all utilized in operating the wells on both properties, according to a custom prevailing among oil operators, does not impose a liability on the lessee.

Prichard v. Freeland Oil Co., (West Virginia), 84 Southeastern, 945, p. 946, April, 1915.

Locke v. Russell, (West Virginia), 84 Southeastern, 948, p. 950, April, 1915.

MUST PROVE DEPENDENCY

The statute of California, section 1970, Civil Code, gives the right of action to a personal representative of a person killed by the wrongful act of another and provides for the recovery of damages for the benefit of the widow, children, dependent parents, and dependent brothers and sisters; and in an action for the wrongful death of a miner against a mine operator for the benefit of the father of the deceased, evidence of the financial condition of the father is admissible, and the word "dependent" as used in the statute was intended to describe a condition of actual dependency, and not a dependency that rested on a presumption on account of relationship, and it was necessary for the plaintiff to prove, not a mere relation of dependency, but actual dependency.

Balakalala Consolidated Copper Co. v. Reardon, 220 Federal, 584, p. 588, February, 1915.

Paskvan v. Allouez Mining Co. (Michigan), 152 Northwestern, 82, p. 84, April, 1915.

OPERATOR'S RESPONSIBILITY

The rule that a mine operator is not required to furnish a safe place for miners where the perils to the working place are caused by the progress of the work in which the miners are engaged, does not apply to persons engaged in drilling holes for firing shots, as such work is not work of construction or repair and in which the risks are caused by the progress of the work and are assumed by the miner; but the operator directs the drillers to work in places prepared for them as they are moved about the mine from drift to drift, and the operator has undertaken to inspect each working place before assigning the drillers to the work there; and under such circumstances an operator is liable for failure to give proper inspection to discover "missed shots," where such missed shots could have been discovered by inspection, and the operator is not relieved from the duty of inspection and from liability for failure to inspect for shots simply because drillers themselves do generally look out for missed shots.

Balakalala Consolidated Copper Co. v. Reardon, 220 Federal, 584, p. 589, February, 1915.

IS NEGLIGENCE

The statute of Indiana, section 8581, Burns Annotated Statutes, 1914, requires mine operators to provide places or refuge holes in the side walls of the mine of every haulageway used as a passageway by employees in traveling to and from their work, where there is not a clear space of at least three feet in width between the side of the car and the wall or rib; and a complaint in an action by a miner for an injury is sufficient where it avers that the operator failed to provide such places of refuge and the space was less than three feet in width and the miner was injured while passing along the haulageway; and the complaint need not allege that it was practicable to construct places of refuge without interfering with the working of the mine; nor is it necessary to allege that the operator had actual or constructive notice that the space between the side wall and the car was less than three feet, as the violation of a statutory duty is negligence per se.

Vandalia Coal Co. v. Coakley (Indiana Appeals), 180 Northeastern, 382, p. 384, March, 1915.

TRACK DEFECTS

In an action by a miner for injuries caused by his head being caught between a car he was pushing and the wall or rib of the entry, due to an alleged defect in the track, where the question of liability depends on whether the mine operator was to lay the track or whether it was the miner's duty to lay the track, the question of negligence or contributory negligence becomes a question of fact for the jury to determine and in determining the question the jury has the right to consider the fact that the miner was furnished light rails for the track in his room while the mine operator laid its part of the track with a heavier rail and to consider the further fact whether the accident happened while the car was running on the lighter rails or on the heavier

rails; and the jury has a right to rely upon the further fact as tending to make the mine owner liable, that the pit boss had examined the defect in the track and promised to have it repaired, as this was a recognition by the operator of the duty upon his part to repair the defect.

El Paso County Land & Fuel Co. v. Perdaris (Colorado), 147 Pacific, 675, April, 1915.

NO DISTINCTION

Where an employee or miner makes a complaint to his employer of a dangerous defect in his place of work, or in the appliances furnished him with which to work, and the employer makes an unconditional promise to repair the defect, the risk of the defect is cast upon the employer until such time as would preclude all reasonable expectation that the promise might be kept, unless the danger from the defect is so imminent that a person of ordinary prudence would not risk injury therefrom; and there can be no distinction in principle, in so far as the liability of an employer is concerned, between an unconditional promise to repair and a promise to repair on a certain date, or after the happening of a particular event.

El Paso County Land & Fuel Co. v. Perdaris (Colorado), 147 Pacific, 675, p. 677, April, 1915.

OPERATOR LIABLE

The law imposes upon a mine operator the duty to warn and instruct an infant employee of latent dangers; and if such infant employee, in obeying the orders of a general superintendent, engages in services other than those regularly assigned to and performed by him, dangers from which such employee does not comprehend or appreciate because unknown to him, but of which the employer knows or by the exercise of reasonable diligence ought to know, and fails so to warn and instruct the youthful employee, the mine operator is liable for resulting injuries to such infant employee, where he is free from negligence directly contributing thereto.

Dillon v. United States Coal & Coke Co. (West Virginia), 84 Southeastern, 956, p. 958, April, 1915.

CANNOT ESCAPE LIABILITY

The liability of an employer for injuries sustained by an infant employee in the course of his employment depends upon the infant's capacity to comprehend and avoid the incidental dangers and whether he is fully advised concerning them; but in the absence of such capacity and intelligence the employer cannot escape liability on the ground that the injury to the infant or minor was due to accident or negligence of a fellow servant; and the duty imposed as to dangers incident to the work and not patent to the infant, or the existence of which he is not advised, or by reason of lack of incapacity and experience he can not appreciate or avoid, requires the employer to respond in damages for injuries resulting from such dangers.

Dillon v. United States Coal & Coke Co. (West Virginia), 84 Southeastern, 956, p. 959, April, 1915.

NO PROOF OF GAS

The fact that the lessee of an oil and gas lease who had drilled and was operating oil wells, installed and connected vacuum pumps in connection with such wells for the purpose of increasing the production thereof; and the further fact that the lessee successfully utilized what was called or termed "vapor" which was emitted from the wells at the casing head, and by process of distillation and compression converted the escaping substance into gasoline for the mutual advantage and benefit of the lessee and lessor, did not thereby render the lessee liable for the annual rental of gas wells, under the terms of the lease, as the mere collecting of the vapor or volatile substance and the manufacture of gasoline therefrom was no indication of proof of gas in the wells, and did not bring them within the terms of the lease as producing gas wells.

Locke v. Russell (West Virginia), 84 Southeastern, 948, p. 949, April, 1915.

NOT A PARTNER

Joint owners of an oil and gas lease who worked the lease together though not under any special agreement, are partners, and as such they are subject to the jurisdiction of equity; but a sale or an assignment by one member of his interests in the lease does not terminate a mining partnership; and a deed of trust by one such partner on his share operates as a sale to the trustee, but it does not constitute the trustee a member of the partnership.

Wetzel v. Jones (West Virginia), 84 Southeastern, 951, p. 952, April, 1915.

RULE HELD RESPONSIBLE

Section 493, Code 1913 of Alabama, requires every mine operator to adopt special rules for the government and operation of his mine, covering all the work pertaining thereto in and outside of the same, and contemplates the making of a rule regulating the operation of motors and limiting the maximum number of loaded cars that may be hauled on any single trip, as this pertains to the operation of the mine and for the reason that there is more danger in operating a long train than a short one, and a rule on the subject would be a reasonable requirement.

Jaggie v. Davis Colliery Co. (West Virginia), 84 Southeastern, 941, p. 943, April, 1915.

DUTY OF OPERATOR

Motor tracks in a main haulageway of a coal mine partake of the nature of both a place and an appliance and as they are permanently laid in the mine they therefore become a part of the place and are essential to the operation of the motor and therefore an appliance for the removal of coal and it is the duty of the mine operator to maintain his motor and motor tracks in a reasonably safe and suitable condition for the safety of an employee operating a motor in hauling coal out of a mine.

Jaggie v. Davis Colliery Co., (West Virginia), 84 Southeastern, 941, p. 942, April, 1915.

Crockett v. Keystone Coal & Coke Co. (West Virginia), 84 Southeastern, 948, April, 1915.

MUST KEEP TRACKS SAFE

The statute of Alabama requires a mine operator to employ a mine foreman and prescribes the duties of the mine foreman to be, among other things, to keep and carefully watch over the ventilating apparatus and the air ways, traveling ways, pumps and drainage, and to see that proper break-throughs are made, brattices used, no loose coal, slate or rock is hanging overhead or along the haulageways and sufficient props, caps and timbers are furnished to miners, the water drained out of the working places and recesses made along the haulageways of not less than 100 feet apart between the wagon and the ribs for refuge, and provide a proper system of signals and lights, where hauling is done by machinery of any kind; but nowhere is the foreman expressly given supervision of the motor tracks and he is not required to see that they are maintained in a safe and suitable condition, nor does the statute mean to impose that particular duty upon the mine foreman, as supervision of the tracks is not a duty to be implied and it is not essential to the complete performance of any of the acts expressly required of the mine foreman; and under the statute thus considered it therefore remains the imperative duty of the mine operator to see that the tracks, trolley wire and motors are maintained in a reasonably safe condition.

Jaggie v. Davis Colliery Co. (West Virginia), 84 Southeastern, 941, p. 942, April, 1915.

Crockett v. Keystone Coal & Coke Co. (West Virginia), 84 Southeastern, 948, April, 1915.

See Crockett v. Black Wolf Coal & Coke Co. (Alabama), 83 Southeastern, 987.

NOT AN AGENT

The right of a miner to a lien upon a mine or mining claim for labor done or material furnished under the statute of Arizona must be tested by the statute existing at the time the labor was performed or the material furnished, and if the labor is performed or the materials furnished before the amended act of December, 1912, then the right to the lien must be found as the statute existed before that date, as the amendatory act can not have a retroactive operation, as such an application of the amendatory act would be a substantial interference with the obligation of the contract itself; and prior to the amendatory act the mere fact of the existence of the contract to purchase or an option to buy a mining claim, by the terms of which the purchaser was permitted to enter upon, work and develop the mine, with no additional powers over the property, would not constitute the proposed purchaser the agent of the owner, and would not make the mine or mining property subject to the lien of miners who were employed by the person holding the contract or option to purchase.

Oceanic Gold Mining Co. v. Steinfeld (Arizona), 147 Pacific, 717, p. 718, April, 1915.

A convention of the manufacturers of permissible explosives will be held in Washington, June 7.

BUREAU OF MINES PUBLICATIONS

The following publications have recently been issued by the Bureau of Mines:

Bulletin 76. United States coals available for export trade, by Van. H. Manning. 1914. 13 pp.

Bulletin 77. The electric furnace in metallurgical work, by D. A. Lyon, R. M. Keeney, and J. F. Cullen. 1914. 216 pp., 56 figs.

Technical Paper 76. Notes on the sampling and analysis of coal, by A. C. Fieldner. 1914. 59 pp., 6 figs.

Technical Paper 94. Metal-mine accidents in the United States during the calendar year 1913, compiled by A. H. Fay. 1914.

TECHNICAL PAPER

Technical Paper 76. Notes on the sampling and analysis of coal, by A. C. Fieldner. 1914. 59 pp., 6 figs.

Technical Paper 80. Hand-firing soft coal under power-plant boilers, by Henry Kreisinger. 1914. 83 pp., 32 figs.

Technical Paper 94. Metal-mine accidents in the United States during the calendar year 1913, compiled by A. H. Fay. 1914.

BULLETINS

Bulletin 76. United States coals available for export trade, by Van H. Manning. 1914. 13 pp.

Bulletin 77. The electric furnace in metallurgical work, by D. A. Lyon, R. M. Keeney, and J. F. Cullen. 1914. 216 pp., 56 figs.

Bulletin 84. Metallurgical smoke, by Charles H. Fulton. 1914. 32 pp., 6 pls., 14 figs.

Bulletin 85. Analyses of mine and car samples of coal collected in the fiscal years 1911 to 1913, by A. C. Fieldner, H. I. Smith, A. H. Fay, and Samuel Sanford. 1914. 444 pp., 2 figs.

Commends Helena Bureau

Walter Harvey Wood, in commenting on the Helena Mining Bureau, says:

"Your subscribers have reason to feel well satisfied with the work accomplished; the bureau has not only done a great public service in attracting the attention of investors to the Helena district, but the money thus far expended has opened up two properties."

Twenty students of the Michigan School of Mines have been visiting in the iron country studying operations.

CONSTITUTION VIOLATED BY LEASING SYSTEM SAYS COLORADO AUTHORITY

William G. Haldane, Acting President of the School of Mines at Golden,
Writes Strong Paper Attacking Federal Policy—Says Each State
Should be Admitted on Equal Footing

A violation of the Constitution of the United States is seen by William G. Haldane in the leasing system being forced upon the West. Mr. Haldane is the acting president of the Colorado School of Mines. He says the system violates the provision of the Constitution which declares that each State shall be admitted on the "equal footing." He states that it was not the intention of the writers of the Constitution to allow permanent Federal ownership of the public domain. He cites a ruling of the Supreme Court to sustain the view he has taken. He brings out clearly the unfair burden of taxation that is heaped upon private owners by the policy.

DRAWN AS ILLOGICAL

Mr. Haldane in a recent paper on the subject says, in part:

"A question of paramount importance to the West at the present time is that relating to the disposition of the public domain. Through various processes of illogical reasoning the conservation wave has developed and expanded to a point where in certain bureaus of the Federal Government efforts are being made to withhold from public entry, in some of the public land States, certain areas containing valuable mineral and to provide in lieu thereof a leasing system whereby the principle of perpetual ownership on the part of the Federal Government is established. Numerous bills have been introduced in Congress, recently, providing for a leasing system for various metals, oil, asphaltum, phosphate, sodium, potassium and grazing lands of the public domain, and some of these bills have passed the House of Representatives.

It is hardly conceivable that the writers of the Constitution of the United

States ever intended that such a policy should obtain or that the States in ratifying the Constitution intended or expected such an interpretation.

"The people of the original States obtained title to their lands by settlement upon them and by payment of a price of some sort, and this policy of disposal has been adhered to from the beginning up to the time the Rocky Mountain region was reached, with one exception. In 1807 Congress passed an act, afterward repealed, providing for the leasing of lead mines, justification for this legislation being claimed in the fact that lead, being a munition of war, a more definite supply might be obtained under the leasing system. Since, in the act admitting States to the Union, the Constitution specifically provides that, "Each State when formed shall be admitted upon an equal footing with the original States in all respects whatsoever," have not the Rocky Mountain States the right to expect the same treatment as that accorded Ohio, Indiana, Illinois, Kansas, Missouri and other public lands? These States had the advantage and benefit of their natural resources, without the payment of rents or royalties, and it would appear an unjust, as well as an unfair, discrimination to rule otherwise with regard to Colorado, Utah and others, later admitted to the Union, on a policy which ever contemplated the holding in perpetuity of the public domain, by the Federal Government.

WEST COASTERS AGG

"It seems that for purposes of development and growth, if any district should be favored by a liberal land policy, surely this Western country should be the one.

"The area of the remaining public lands with the States totals 343,000,000 acres, an area equal to two-thirds of the territory east of the Mississippi River, hence the effect of the land policy on those States in which this acreage is located is of serious consideration.

"In Colorado, less than one-third of the land is in private ownership; in Arizona, about one-half; in Wyoming, less than one-eighth, and in other public-land States similar conditions exist, so that it can be seen how seriously this question of leasing affects us.

"In our own State it means that the taxation burden of the whole area is borne by the one-third, since the act admitting States provides that public lands shall not be taxed.

"The United States Geological Survey estimates 370,000,000,000 tons of coal in Colorado, sufficient to supply the world for several hundred years; nine-tenths of this is situated on the public domain. Estimating the value of this land at \$500,000,000, it can be seen that exempting this from taxation deprives the State of a fruitful source or means of maintaining efficient government, school, county and State.

NO ROYALTY IN EAST

"Under the royalties imposed by this leasing system on coal alone, assuming 10 cents per ton, the people of this State would have to pay, ultimately, over thirty-three billions of dollars, when the people of the Eastern States have not paid a cent by way of royalty on their coal.

"The imposition of such a levy is a very serious handicap to a Commonwealth in the struggle for industrial supremacy.

UNNECESSARY WITHDRAWALS

"In Colorado alone the Forestry Bureau has established reserve to the extent of 14,560,480 acres, an area equal to that of Connecticut, Massachusetts and New Hampshire combined. Twenty per cent. of this acreage lies above timber line, where no trees can grow, and 65 per cent. of the known mineral areas of the State is included within these reserves.

"Withdrawal from entry of water-power sites for the past eight years has

practically paralyzed development of that important resource. In Colorado it is estimated that we have developed but $4\frac{1}{2}$ per cent. of our water power. To produce the best conditions, the freest opportunity must be given for development. Anything that imposes restrictions impedes the same.

QUOTES SUPREME COURT

"The United States Supreme Court in 1845 declared in re certain public lands in Alabama:

"The United States never had any municipal sovereignty, jurisdiction or right of soil in and to the territory of which Alabama, or any of the new States were formed, except for temporary purposes, and to execute the trusts created by the acts of Virginia and Georgia Legislatures and the deeds of cession, executed by them to the United States, and the trust created by the treaty with the French Republic, of the thirtieth of April, 1803, ceding Louisiana. * * * When the United States accepted the cession of territory, they took upon themselves to hold the municipal eminent domain for the new States and to invest them with it, to the same extent, in all respects, that it was held by States ceding the territory."

"In conclusion, let me contend that the policy of the National Government, with regard to the Federal leasing system, represents extreme conservation; it retards our developments and imposes upon the West a bureaucratic rule, and deprives the Commonwealth of its just and Constitutional rights. It was the late Justice John M. Harlan, of the Supreme Court of the United States, who said:

"A National Government for national affairs and State government for State affairs is the foundation rock upon which our institutions rest. Any serious departure from that principle would bring disaster upon the American system of free government."

Breaks Hoisting Record

The Peabody mine, at Pana, Ill., broke the State record when 4,800 tons was hoisted in eight hours, an average of 600 tons per hour, or ten tons per minute.

INDUSTRIAL PENSIONS UNDER CONSIDERATION

Gila County, Ariz., Chapter of Mining Congress, Plans to Aid Wage Earners

Organization Recently Formed Has Close to 400 Members—Plans Many Activities

A spirit of enterprise and determination is being evidenced in the newly formed Arizona chapter of the American Mining Congress. The Gila County section, hardly three months old, soon will have 400 members. The following communication from Patrick Rose, the manager, sets forth some of the plans of the new organization.

The Gila County Section of the Arizona Chapter of the American Mining Congress has been in active operation for less than three months. During this time a prospective membership of four hundred is assured. The membership represents men in various industries. Business men, professional men, mechanics, stock men, farmers, railroad men and others throughout the county have joined.

Mining is the paramount industry of this county on which nearly all other industries solely depend, not only in Gila County, but in neighboring counties as well.

Were it not for the mining industries the agricultural products would little more than defray the transportation expenses of their marketing—a fact which is readily recognized by those interested in agriculture. Those profiting by this knowledge are among our most enthusiastic supporters. Patented, non-patented productive mines, concentrators and smelters represent 72 per cent. of the \$36,292,000 assessed valuation of Gila County for the year 1914. It naturally follows the increased production, scientific treatment and prosperous commercial values of the output of these mines, extends its beneficial influence to all other industries in this district. To amalgamate those industries in an Association having for its ultimate object the creation of conditions under which the great mining industries of Arizona and those depending upon them may be operated at a conservative profit, is our aim.

To better conditions of the employes, both above and under ground; to solicit Federal and State legislation favorable to the scientific treatment and exploration of the mining and metallurgical industries; to place before the inquiring public and the prospective investor the facts of the wonderful and natural resources of the mineralized zones of Arizona, also will be the object of earnest effort.

To assure capital through safe and sane legislation, both Federal and State, that its investments and profits are safeguarded, is a further object of the organization. In no other industry are the opportunities in the Southwest greater than that of developing the copper, silver and gold deposits in Arizona.

Efforts to continue the social and friendly relation such as now exists between the employer and employe in the mining and other industries of the district will be made. Cooperation towards an economic and systematic plan by which the industrial workers in the various crafts may be cared for in their old age, and partial or total disability is to be attempted. A system which places the responsibility of its creation and management on the employe and employer alike will be striven for.

STATE GEOLOGISTS HOLD ANNUAL MEETING HERE

Despite the curtailing that has been done in appropriations in most States, a normal increase in the amount of cooperation between the U. S. Geological Survey and the various States is reported. State geologists and engineers met in Washington recently and went over the plans for the work of the coming year. The meeting was well attended. Those attending were:

Dr. E. H. Sellards, Tallahassee, Fla.; Dr. S. W. McCallie, Atlanta, Ga.; F. W. DeWolf, Urbana, Ill.; Prof. Geo. F. Kay, Iowa City, Iowa; J. B. Hoeing, Frankfort, Ky.; Dr. Wm. B. Clark, Johns Hopkins University, Baltimore, Md.; R. C. Allen, Lansing, Mich.; E. V. Willard, acting State engineer, St. Paul, Minn.; H. A. Buehler, Rolla, Mo.; Dr. H. B. Kummel, Trenton, N. J.; Frank M. Williams, State engineer and surveyor, Albany, N. Y.; Dr. Jno. M. Clark, New York; Prof. C. E. Sherman, inspector, Ohio Cooperative Topographic Survey, Brown Hall, Univ. of Ohio, Columbus, Ohio; G. W. McNess, chairman Penn. Survey Comm., Kittanning, Pa.; Richard R. Hice, Beaver, Pa.; Prof. A. H. Purdue, Nashville, Tenn.; Dr. Thos. L. Watson, Charlottesville, Va.; Dr. L. C. White, Morgantown, W. Va.; Dr. W. O. Hotchkiss, Madison, Wis.; L. W. Trumbull, Cheyenne, Wyo.

MINERAL PRODUCTS SHOWN ON PANAMA CANAL STATISTICS

An analysis of traffic passing through the Panama Canal during February shows an increasing amount of mineral. One cargo of coal moved from Glasgow to San Francisco. Another cargo of coal originated at Norfolk and was destined to San Francisco. Iron ore, amounting to 19,850 tons, was shipped from Cruz Grande. Nitrates moved in quantity from Chilean ports to Europe and to the United States. Several cargoes of refined petroleum passed through the canal, moving from the Atlantic to the Pacific, and were consigned to Japan, China, Philippines, San Francisco and some ports on the Pacific side of Central America.

SURVEY BEGINS REPORT ON ARIZONA QUICKSILVER

Quicksilver in the Mazatzal Range of Arizona is the subject of a brief report which just has been begun by the United States Geological Survey. The report will not be published for five or six months.

MAP MADE TO EMBODY NEW INFORMATIVE DETAILS

A geological map, which will be an innovation, is about to be issued by the Survey. It covers the Behring River coal field. A detailed survey of the field was made in 1906. The report is out of stock. It was found advisable not to re-issue it, but make a map in which the most important data will be included. The map will show the areas of coal lands, structure sections of the beds, as well as their general attitude. A summary of the chemical analyses of the coal as sampled, also will appear on the map. All provision has been made for the map to show the essential features of the report.

An indexed map will show the relative position of the field to the new railroad as well as to the existing railroad. It is hoped to have this map ready for distribution by June 15. It is a sale publication.

MINNESOTA SCHOOL OF MINES GETS AN INCREASE

Report is Circulated that Work Would Be Hampered by Lack of Funds

Press statements to the effect that the Minnesota School of Mines had been handicapped seriously by the failure of the legislature to grant it a sufficient appropriation are without foundation. In this connection, George E. Vincent, president of the University of Minnesota, advises as follows: "The report that the Minnesota Legislature had made no appropriation for the maintenance of the School of Mines is without substantial foundation. A small appropriation dating from 1895 was given up and merged in the large appropriation of more than half a million dollars annually for the general support of the institution. There will be no diminution whatever, but rather a slight increase in the amount devoted to mining instruction and investigation for the coming two years."

ARIZONA OFFERS JOBS TO UNDERGRADUATES OF MINING SCHOOLS

As the University of Arizona College of Mines has more positions open in the mines of the State for its undergraduates than it can fill, an invitation has been issued to undergraduates of other mining schools who wish to take advantage of the opportunity offered. The positions to be filled carry with them remuneration ranging from \$2.50 to \$3.75 per day, in addition to offering splendid opportunities for acquiring practical knowledge.

NEED OF MINE LOCOMOTIVE INSPECTION BEING RECOGNIZED

Indications are that the time is not far distant when the Bureau of Mines will have its seal on every locomotive in the coal mines of the country. The necessity of having locomotives equipped with motors which will stand careful examination, is becoming more and more evident. The effort in this behalf met a little opposition.

WORLD'S GOLD PRODUCTION MUST BE INCREASED OR CREDIT EXPANSION WILL BE CHECKED

Englishmen Now are Mining Sixty-five Per Cent. of Yellow Metal—Economic Requirements of the Western Hemisphere Demand Increased Output of Gold—System and Science are Lacking

BY RUSSEL F. COLLINS—SPOKANE, WASH.

The subject of money has been discussed in its various forms from the earliest period of business relationships. It has been the medium by which merchants and tradesmen have transacted their business. I shall not attempt, in this brief article, to go into the history of money, but shall attempt to show the relationship of gold, which has been accepted as the universal standard or basic money, and its relationship to the world's credit money of today. The various forms of credit under the present system of money standards are given recognition because of the fact that gold is looked upon, and, in fact, pledged as the final redemption of almost all of the outstanding credit obligations. This being true, it is the problem of the world today to keep in mind the necessity of increasing the world's gold stock for monetary purposes in a ratio, comparing with the increasing volume of credit. If this is not done, the world's gold stock will be reduced, as the years go by, while the credit side is increased by leaps and bounds, until finally the history of hundreds of years will be repeated in the general scramble for specie and the general depreciation of credit.

ROME'S EXPERIENCE

At the beginning of the Christian era the Roman Empire possessed the equivalent of \$1,600,000,000. At the beginning of the ninth century that gold supply had dwindled to \$500,000,000. The constant stream of the yellow metal was borne by the camel trains across the desert to India, where it was exchanged for the luxuries of the tropics, from which seclusion it never returned. Hence, we find a condition in the Roman Empire of poverty, starvation, and a general

cataclysm, due largely to the sapping away of the blood of its commercial life. Two elements enter strongly into what is generally termed prosperity; first, an increasing money supply beyond the relative increase in trade, causes a general rise in prices, which in turn whets the speculative appetite, which, again in turn, speeds up the circulation of the money and brings out of hiding, and into the general channel of exchanges, the money of the conservative and the miser. A general reduction of the money stock in the circulation of a country's business life tends to bring down the general price level, which, in turn, causes the business man, the speculator and the miser to join in a general attempt to liquidate or withdraw his money from the channels of trade. This, in turn, slows down the speed at which the money circulates. As an illustration, during a boom period and good times, a \$20-note will pass from hand to hand daily, possibly two or three hands in a single day, whereas when the times are slack, the owner of this note becomes more conservative and it will be retained in one hand for a week, or even a month, before it passes on to the hand of another.

ENGLAND PROFITS

The master financiers of Europe, having at their hands the financial experience of centuries, have looked especially into this peculiar effect of the inflation and contraction of the monetary circulation of a country. They have not only mastered this, but they have appropriated it to the selfish use of the money master. For instance, it is a common practice for the moneyed houses of England, controlling the financial center of the world, to spend twenty, fifty, or even five hun-

dred million in the building of railroads, the purchase of cheap real estate, construction of waterpower dams, or municipal improvements in a foreign country. This amount of money, invested in the country where they have undertaken these enterprises often doubles—or even more than doubles—the total amount of monetary circulation in that country. This increase of the money stock always tends to cause a general rise in stocks, real estate, town lots, labor, etc., in this country. Speculation inevitably follows such a rise. In a few years these master financiers, as though engaged in a great chess game, are able to liquidate upon their town lots, upon their stocks, upon their various investments, which more than takes back to them the entire amount of their original investment, leaving them with a substantial investment in the securities of the country involved.

EFFECT OF FLUCTUATION

The general gold stock of the world, in the last few decades, has shot upward by leaps and bounds, coupled with a general increase in the world's credit money, including checks, to which is traceable the general advance in the price of securities, land, stocks, town lots and other things. This increase, as is always the case, has been accomplished by the speculative period—the wild dash to make money without doing anything—but in the last two or three years we find the production of gold not only short of the years previous, but an actual falling off. No countries are so vitally affected by this reduction of the basic money as the debtor country, because its interest is constantly accumulating, its obligations maturing, and the general tendency to reduce the price of the commodities, or securities, by means of which the debtor country is to pay its obligations. Therefore, it behooves the United States, as well as all the States of the western hemisphere, to do everything within her power to carry forward the systematic production of gold, so long as gold is made the base of redemption and in which their final obligations are to be met. So thoroughly had the Englishmen, statesman

and business man, studied out the far-reaching effect of this monetary control, that they not only brought the world to a gold standard, but for the last forty years Englishmen have mined approximately 65 per cent. of the world's gold production. I repeat that America—North and South—should join in a serious consideration of the subject of gold mining, treat it on the same far-seeing lines that the bright minds across the Atlantic have treated it in the past; treat it systematically and scientifically.

BUREAUS COOPERATE IN STUDY OF AMERICAN PLACERS

J. M. Hill, of the Geological Survey, has been selected to cooperate with the representative of the Bureau of Mines in a general investigation of placer deposits of the United States. Mr. Hill will be in the office in Washington all summer compiling available data on American placers. In addition, blanks will be sent out to all placer operators so that Mr. Hill may go to the field so equipped as not to duplicate work already done.

Honor Bureau Heroes

Care is being taken by many interested in the cause of greater safety in mining, that the names of Joseph Evans, John Farrell and Edward Evans be not forgotten. These three rescuers who lost their lives in the service of the Bureau of Mines are deserving of tributes from all mine operators or workers, they hold. To such men as these is due, in a large measure, the decrease in mine disasters, and the increased efficiency of the rescue work as now conducted by the Bureau of Mines.

Canada Publishes Report

A publication of the Department of Mines of the Dominion of Canada was issued during the past month. It is part three of "The North American Cordillera" (forty-ninth parallel). It is accompanied by numerous maps. This work is by Reginald Aldworth Daly.

**TEACHES FOREIGN EMPLOYEES;
GOOD RESULTS APPARENT**

**Mine Foreman at Dunbar, Pa., Starts Night
Class Among Work-
men.**

**Illiterates Learn to Read and Write
Quickly—School
Grows.**

Much attention is being given throughout mining districts to the education of the foreigner. A recent communication from John T. Bradley, a mine foreman at Dunbar, Pa., addressed to the *Coal Age*, contains some interesting information. The letter reads as follows:

"I want to relate some of my experience in educating this class of mine-workers. Before doing so, however, I will say that the foreigners, or the great majority of them at least, are not capable of making much headway by themselves. As a class, they require much pushing.

"The majority of the foreigners employed in these mines enjoy sitting around the coke ovens, in the evening, after the day's work is done, and recounting the happenings of the day or recalling incidents past and present. Such was the general condition of this class when I first came to the coking plant. I approached several of these men and found a ready response to my inquiries. They said that they would gladly attend a night school if they had a teacher. I offered my services and promised that if more was required than what the superintendent of the plant and I could give them, we would arrange to have a teacher come over from the adjoining township.

"The following evening a meeting was held in the little schoolhouse, and five men were present. Everything was arranged that evening for the opening of the night school at once. This was done, the first session of the school being held the next evening. The work began with the study of reading, writing and arithmetic. At the end of a month there were fourteen scholars in attendance. Some of these could not read or write, and a few did not know A from B, but they all persevered in their work. The first term

lasted six months and at its close each man could read and write and some were so far advanced as to be able to figure in decimals.

"It may readily be imagined that it took lots of grit and perseverance to keep this class together and to make it interesting to all. Occasionally the men would stay away by turns, but whenever this happened I would hunt them up and ask them the reason for their absence. Often the reply was, 'I can't learn,' or 'I hate to trouble you so much,' or 'I am so tired in the evening that I do not feel like studying.' Still we persevered. The class was held twice a week, the session opening at 7 o'clock in the evening. Often we would not leave the school until 10 or 10.30 o'clock.

"The class has been in session for three months, this term; and we have a few more advantages than we enjoyed last year, owing to the superintendent's taking up the matter with the company. Being a progressive man himself, he succeeded in interesting the company in the men's welfare. As a result the officials gave us the use of one of the company's houses and had it fixed up for a school, including also a 'first-aid room.' The men were free to meet in this place every evening, if they desired, and those who wished enjoyed the privileges of smoking.

"At the present time many of the men are well advanced in the common rudiments and have commenced the study of mining, including mining laws. Monday night is 'first-aid night.' There are twenty men in the first-aid class, and the mine foreman is the instructor. Indirectly, the sessions of the school are a great benefit in keeping the men occupied and drawing them away from the saloons. I often mention in my talks the evils of gambling and drinking, and this has a good effect.

"The work of the school keeps me busy in my spare time, looking over the work of the previous night or preparing questions for the following evening. However, no one but those engaged in the work knows the satisfaction that comes from seeing the improvement of men who were once illiterate, but are now able to read and write. This satis-

faction certainly pays well for all the energy expended in keeping the men interested and at work. I can say that the experience gained has been a personal benefit to myself. I am convinced that if more mine officials would interest themselves in the same way for the welfare of their men there would be less booze consumed and less crime committed. The work will produce better men and more skillful workmen in the next generation, if not in this. Its tendency is to make law-abiding citizens."

GEOLOGICAL SURVEY PUBLICATIONS

The following are new publications by the United States Geological Survey:

Bulletin 581-D. Geology and Oil Prospects in Waltham, Priest, Bitterwater and Peachtree Valleys, California, with Notes on Coal, by R. W. Pack and W. A. English. 1914. Pp. 119-160, Pl. V, figs. 3-6.

Parts of Mineral Resources of the United States, calendar year 1913, as follows:

Mineral Products of the United States: Review of Conditions and Output in 1912 and 1913, by E. W. Parker, with a summary of mineral production in 1913 compiled by W. T. Thom. 1914. Pp. vii-clxix, fig. A. Part I: A.

Gold, Silver, Copper, Lead and Zinc in Idaho and Washington in 1913 (Mines Report), by C. N. Gerry. 1914. Pp. 755-801. Part I: 24.

Gold, Silver, Copper, Lead and Zinc in Nevada in 1913 (Mines Report), by V. C. Heikes. 1914. Pp. 803-844. Part I: 25.

Gold and Silver in 1913 (General Report), by H. D. McCaskey. 1914. Pp. 845-885. Part I: 26.

The Production of Petroleum in 1913, by D. T. Day. 1914. Pp. 929-1284, Pls. III-IV, figs. 20-21. Part II: 32.

The Stone Industry in the United States in 1913, by E. F. Burchard. 1914. Pp. 1285-1410, Pls. V-VII. Part II: 33.

The Production of Natural Gas in 1913, prepared under the supervision of D. T. Day by B. Hill. Pp. 1411-1507. Part II: 34.

The Source, Manufacture and Use of

Lime, by E. F. Buchard and W. E. Emley. 1914. Pp. 1509-1593. Pls. VIII-IX, figs. 22-25. Part II: 35.

Thirty-fifth Annual Report of the Director of the United States Geological Survey to the Secretary of the Interior, for the fiscal year ended June 30, 1914. 163 pages, 2 plates.

A detailed account of the work of the Geological Survey during the fiscal year 1914, with a statement of the total appropriation made by Congress for the Survey and the allotments for each kind of work. Under the heading "Special features" is a brief discussion of the province of a federal survey. The report also includes abstracts of the publications of the year and maps of the United States showing areas covered by topographic and geologic surveys.

Bulletin 576. Geology of the Hanagita-Bremner Region, Alaska, by F. H. Moffit. 1914. 56 pages, 6 plates, 6 text figures.

This bulletin presents information about a region that was very little known prior to 1911. Although the author's survey was of a reconnaissance character, it was sufficiently detailed to outline the geography, general geology, and geologic history of the region and to obtain information about the occurrence and distribution of the gold and copper deposits. The Hanagita-Bremner region includes some mineral deposits which, though almost undeveloped, give promise of becoming commercially valuable, now that they have been made comparatively accessible by the railroad recently completed up the Copper River valley. The illustrations include topographic and geologic reconnaissance maps, a map showing the distribution of timber, and diagrams illustrating some of the methods of formation of canyons and other stream channels.

Bulletin 580-M. The Rochester Mining District, Nevada, by F. C. Schrader. 1914. Pp. 325-372, Pl. VIII, figs. 89-92.

Bulletin 580-N. The Elliston Phosphate Field, Montana, by R. W. Stone and C. A. Boline. 1914. Pp. 373-383, Pl. IX.

Bulletin 580-O. The Rutile Deposits of the Eastern United States, by T. L. Watson. 1914. Pp. 385-412, figs. 93-97.

Bulletin 580-P. Publications by Survey Authors on Metals and Nonmetals except Fuels, compiled by I. P. Evans. 1914. Pp. 413-455.

Parts of Bulletin 580, Contributions to Economic Geology, 1913, Part I.

Bulletin 600. The Glacier National Park; a Popular Guide to its Geology and Scenery, by M. R. Campbell. 1914. 54 pages, 13 plates, 13 text figures.

TALK OF THE DAY

CHANGES FOR BETTER

From the standpoint of the copper producing mines it is to be borne in mind that anything less than 100 per cent. capacity production tends to hold down profits and increase the cost per unit of output; but so great has been the improvement in the whole domestic copper situation since the turn of the year, when millions of pounds of unsold copper were being carried by the large producers, that the transformation has been but little short of miraculous, especially with Germany, our largest export consumer, out of the market.—*Daily Mining Record*.

SHOULD SHOW APPRECIATION

If the new Rittman process actually results in the production of cheap gasoline, every motorist in the United States should affix a bust of the young government inventor on the top of his radiator as a token of appreciation. Then will perhaps come another of Uncle Sam's bright young men with a discovery that will lower the cost of rubber tires, or possibly provide a satisfactory and cheaper substitute for the present wheel material. There would still be room for advancement after that, but these two booms would put the automobile public in a mood to propose and elect a presidential ticket.—*Washington Star*.

ACTING ON FACTS

It is, at last, being proved by coal men that no operator will cut a price when he knows that he is also taking a loss. It has been believed for years that such was the case. But proof was delayed because it was so hard to get operators to find what was the cost of production.

They had a system by which they guessed at cost. They guessed wrong, but they believed themselves right. They could not be forced to change their methods or to see the facts. They had to be led to it by patient effort. Men who are

real diplomats had to ask questions, suggest comparisons, volunteer points to be considered, and even prove a loss. When windows into dark minds were thus broken, and when the light entered, the operators finally saw. Now that they see, they are not keen to take the inevitable loss.

If today there is a tendency to hold for better prices, it is not due to any agreement. It is due mainly to the fact that men know what it costs to produce coal and refuse to cut under it. This is sensible reform because it gets the facts first and then acts upon them. Such reform will outlive our period of depression.—*Black Diamond*.

BLOCKED BY HIGH RATES

There is one feature of the bituminous coal trade of this country which is attracting a great deal of attention at the present time and that is the possibilities of increase in our export trade. These possibilities, and, we might say, probabilities, can only be extended into actualities either by an increase in the number of freighters engaged in the off-shore business, as it is called, or by a disposition on the part of foreign users to pay the increased cost which arises from the scarcity of vessels in which shipments might be made. Our prices are probably not 40 per cent. of the price commanded by equally good coal on the other side of the world, at Cardiff, at the same time transportation facilities even at the rates which can now be had are insufficient to meet the demand. It is pleasing to note the fact that tonnage might be placed but it is very annoying, at the same time, not to be able to take advantage of the situation.—*Coal Trade Journal*.

NEEDS MORE PUBLICITY

The mining engineer has certainly failed completely to place himself before the public in the right light. We hear about the "wonderful" advances in bridgework and railroading. Even in our schoolbooks we read about the ingenuity of the inventors of the cotton gin, the harvester and the sewing ma-

chine. The pictures of these men and machines are associated with our earliest recollections. In fact, there was a time when we were divided between a desire to duplicate these inventions and a longing to be a cowboy and kill Indians, so fervent was our hero worship for these pilots of industry.

But the public has no such thoughts about the mining engineer. Only his mistakes have refused to stay buried. His triumphs have failed to impress themselves on the public.

The wonders of the mines have been overlooked, partly because the mines are far from the big cities, and partly because the mining engineer has not sought the requisite publicity, and partly also because we are no longer an appreciative people.—*Coal Age*.

RESCUE STATIONS

Disappointment that Kentucky must wait at least a year for the establishment of a mine experiment station and one or more rescue stations is modified somewhat by the apparent certainty now that these things are to come to us. There is reason to believe that J. A. Holmes, director of the Bureau of Mines, is convinced that Kentucky should be among the first to profit by the Government's renewed interest in mine rescue facilities. More than half the contest was won last week when Congress passed the law authorizing the establishing of experiment and rescue stations; thus the way has been cleared for items appropriating money for definite projects.

The attitude of Director Holmes toward Kentucky's needs, as indicated in Washington dispatches, is peculiarly gratifying in view of the purpose of the administration to introduce a bill into the next Congress authorizing Mr. Holmes and the Secretary of the Interior to select sites for both experiment and rescue stations.

It should not be necessary to present any arguments on the claims of eastern Kentucky in this regard. Up to date we have been peculiarly fortunate in the absence of wholesale disasters; but this carries no guarantee of security in the

future. It would be a great pity if some such affair as that in West Virginia the other day were necessary to drive home the conviction of our requirements in the matter of rescue facilities.—*Louisville Courier-Journal*.

THE QUALITY IDEA

There are many people, as every coal man knows, who look at price first, last and all the time, in everything they buy, whether coal or clothes. The result is, of course, that with these people the appeal of the dealer must always be made to their search for the lowest price, regardless of quality; and, therefore, to that extent, the man who does not deal in the cheapest of goods, but prefers to handle those of the better sort, is considerably handicapped in attempting to drive home the point that it sometimes pays to buy the more expensive article.

This is, perhaps, more true of the coal merchant than of merchants in any other line of business, as the trade knows to its cost. It takes no great amount of intelligence to appreciate, for example, the fact that it costs more to buy a woolen garment than one made of cotton, and so even these chronic bargain-hunters will usually consent, reluctantly, to pay a little more for quality in clothing. But when it comes to coal, it is more of a job to impress the quality idea.—*Retail Coalman*.

COOPERATIVE EXPORT PLAN

The purpose of economic cooperation is to obtain better and speedier results through smaller expenditure of money and effort.

A simple illustration of this is seen in the cooperative export plan of the Illinois Manufacturers' Association. In order to obtain business in Russia for its members, it is sending a representative, of sixteen years' selling experience abroad, to take charge of show rooms and of a selling agency to be established by the association at Petrograd or wherever else it may be found advisable.

Any Chicago firm which may wish to establish an export business in Russia may now be saved the heavy initial ex-

pense which would be necessary if it undertook such work individually.

It is stated that the expense to any member of the Illinois Manufacturers' Association who decides to participate in the plan will be only \$300 a year, payable in monthly instalments of \$25 each. The collective showing of various Illinois manufacturers in the proposed exhibits at Petrograd are expected to afford perhaps the most powerful advertisement that American goods have yet had in Russia.

This plan could be well adopted in other trade fields. Many American firms are now considering entering the export business either for the first time or in countries in which heretofore they have made no efforts. To nearly all of these the chief obstacle will be the initial expense. Through such a method as that prepared by the Illinois association, many firms could take, at small cost, the initial steps in making their goods known in any particular foreign field and in obtaining some business. Having the way thus paved for them, it will be much easier than it otherwise would be to broaden their respective activities along individual lines.—*Financial America*.

TO HURRY CLASSIFICATION OF WESTERN COAL LANDS

Fifteen Geological Survey parties are working in Western coal fields in an effort to classify the withdrawn land as rapidly as possible, so that the non-coal lands may be open to entry as soon as possible. No drilling is being done by these parties, but careful examination of the surface is being made.

Find Copper in Russia

Advices to the Department of Commerce tell of the discovery of important deposits of copper and copper pyrites near Elisavetpol, Russia.

Australian Zinc Imported

The first whole cargo of concentrate zinc passed through the Panama Canal recently. It was shipped from Port Pirie, Australia, to Galveston.

DATA ON ENRICHMENT OF SILVER ORES BEING ASSEMBLED

Edson S. Bastin, of the U. S. Geological Survey, has completed a trip through many of the Western silver camps collecting data on the general problem of the enrichment of silver ores. In connection with F. B. Laney, of the Bureau of Mines, he is now working up the results of this trip, in San Francisco.

BIG HORN BASIN IS ATTRACTING OIL MEN

The manuscript of the report on the oil field of the Big Horn Basin, which has been prepared by Chas. T. Lupton, has been turned in to the Survey. The report probably will be ready for distribution within six months. This oil field doubtless is attracting more attention from oil and gas men than any other one field in the Rocky Mountains at this time.

MUCH OIL PROSPECTING IN PROGRESS IN MONTANA

The State of Montana is attracting considerable attention from oil men just at this time. Most of the operations thus far, are of a prospecting nature. No oil in quantity has been discovered. Field parties of the Geological Survey are busy pointing out favorable structures with an idea of preventing useless drilling.

COMPLETES MANUSCRIPT OF SULPHIDE ORES REPORT

The completed manuscript of W. H. Emmons' report on the enrichment of sulphide ores has been turned in to the Survey. It will be published as a new edition of Bulletin 529. It will be a year, however, before the completed report is published.

Opens Information Bureau

An information department has been opened in connection with the Arizona Chapter of the American Mining Congress. Information concerning every mine and prospect in Arizona is being collected.

RECONNAISSANCE OF NORTH LARAMIE MOUNTAINS FINISHED

A. C. Spencer, of the Geological Survey, just has completed a reconnaissance of the North Laramie Mountains, and of the Atlantic Gold district in Wyoming. The report will be printed in about six months.

Mr. Spencer has returned to Santa Rita to complete a detailed study of that mining district, which will include the disseminated copper ore of the Chino Copper Company. He expects to finish this work before July 1.

To Exhibit Platinum

The Trinity County (California) mineral exhibit at the Panama-Pacific Exposition includes \$2,000 worth of gold nuggets and over \$1,000 worth of platinum. Trinity leads the State in the production of platinum.

Work on Report Hurried

Due to the demand being made for the Geological Survey's reports on Broad Pass and Willow Creek, an effort is being made to hasten the date of its distribution. Broad Pass and Willow Creek are important mining districts along the line of the new Government railroad in Alaska. It is hoped to have this report ready for distribution by the middle of August.

Work in Kerby District

Two topographical parties and one leveling party of the Geological Survey have begun work in the Kerby District of southern Oregon. Three other parties are working out of Preston, Cal., covering a portion of the northwestern corner of that State so as to join the sheet being prepared of the Kerby district.

Tungsten Production

The production of tungsten ores in the United States for 1914 was the smallest since 1908, according to figures given out by the U. S. Geological Survey. The output is estimated as equivalent to 990 short tons, carrying 60 per cent of tungsten trioxide. The output in 1913 was 1,537 tons, of which 953 tons were ferberite from the Boulder field in Colorado. The output of the Boulder field in 1914, however, was only 466 tons.

The more easily mined tungsten ores which lie close to the surface are now largely worked out in the older districts, and mining is thus becoming more difficult and expensive, making it especially hard on the small operator.

The European war has disturbed tungsten mining, but the imports of ore, tungsten, and ferrotungsten, as shown by figures collected by the Bureau of Foreign and Domestic Commerce, have been affected even more. During the year 267 tons of ore, valued at \$139,697, were imported, against 401 tons, valued at \$213,122, in 1913. During 1913 661 tons of tungsten metal and ferrotungsten, valued at \$835,212, were imported. In 1914 these imports dropped to 192 tons, valued at \$219,506.

Preparing Report on Mississippi

A paper on the geology and water supply of Mississippi is being prepared by T. W. Vaughn, in charge of Coastal Plain investigations of the United States Geological Survey. The work is being done in cooperation with Prof. E. N. Lowe, the Mississippi State geologist. This report, which will not be ready for several months, will be of interest to those contemplating mining operations in the iron deposit region of northern Mississippi.

Studies are being made of the ground water problem on the Coastal Plain in Texas west of the Brazos River.

Antimony Reports

While England is credited in the United States customs returns with furnishing nearly half of the antimony imported, according to the United States consular reports, most of that so credited comes from China. A Chinese mining and smelting company has now opened an office in New York for the sale of antimony in line with the desire of the Chinese merchants to sell their antimony direct to American buyers.

Our imports of antimony for 1914 totaled 14,263,629 pounds, valued at \$696,362, against 19,584,624 pounds, valued at \$1,134,467 in 1913. The value of antimony imported in 1911 and 1912 was \$541,588 and \$693,218, respectively.

WEST VIRGINIA COUNTIES ARE BEING TRIANGULATED

Triangulation of Nicholas and Webster Counties, W. Va., is being done by a party from the Geological Survey. The State geologist is cooperating.

Manganese Ore Imports

The European war has seriously affected the importation of Manganese ore and alloys, the alloys being essential in the manufacture of steel and the ore in the manufacture of glass and dry batteries. As the United States has been depending on Russia and India for about three-fourths of its manganese ore and has been importing from England and Germany about half the amount of ferromanganese needed by the steel industry, the effect of the long continuance of the war is a matter for concern. According to figures prepared by the U. S. Geological Survey it is estimated that the imports of ore for 1914 were at least 25 per cent under those for 1913 and those of ferromanganese 40 per cent less.

The decline in imports has been reflected in a rise in prices. One important outcome of the shortage in manganese ore and the consequent increase in prices has been to stimulate interest in mines in this country. A number of mines which were idle have been reopened and are producing. Several concerns are experimenting with the idea of using ores heretofore considered not available.

Arsenic Production

The production of arsenic in the United States during 1914 shows an increase of more than two-thirds over the output of the preceding year. The amount produced was 4,227 short tons, valued at \$251,268, the output being the largest ever made in this country. That for 1913 was 2,513 tons, valued at \$159,236. In 1912 the production was 3,141 short tons, valued at \$190,757. Arsenic is a by-product, obtained in the smelting of lead, copper and silver, and is known as white arsenic, or arsenious oxide. No arsenic, other than that produced as a by-product, has been manufactured in

this country for a number of years, because the arsenic saved at the smelters and the imported material have been so plentiful and so cheap that such a production has been impracticable.

Arrange Alaskan Work

In cooperation with the Forest Service, the Geological Survey is investigating the water resources in Southeastern Alaska. Gauging stations are being put in the principal streams. The work will be maintained during the winter months.

FORESEES RECOGNITION

That the *Washington Times* foresees the more general recognition of the Bureau of Mines may be judged from the following editorial, which appeared in a recent issue:

The Federal bureau of thrills, known as the life-saving service, has passed into the newly organized Coast Guard Service. So the Bureau of Mines enters a claim to be considered the official hero roster of the Government.

If mines were not in out-of-the-way and inaccessible places, if cool, deliberate facing of death did not attract less attention than a sudden plunge into peril, the mines long ago would have furnished more thrills than the sea. All the mines need is a Joseph Conrad to unravel their romance for popular imagination.

The Bureau of Mines sent its rescuers to Layland, W. Va., and there after prowling about in the ruins of a dank, dark underground city, they rescued forty-seven miners who had been imprisoned four days, following a terrific explosion.

To see a drowning man, to plunge in and bring him ashore, wins a hero medal. To study a blue print of a buried labyrinth of paths and channels, to walk coolly in amid the gaseous vapors, to place one's life in the uncertain breath of an oxygen tank—all this requires a deliberate sort of courage of the higher order which has not yet been recognized nor even very widely advertised.

But recognition of the work of the Bureau of Mines is growing, and it will not be long until it will be known, as are the Weather Bureau and the Coast Guard Service, as both a savor and conservator of life. The work of rescue is being constantly perfected to minimize the danger to volunteer rescuers.

The imports of gold in 1914 were \$57,-387,741, and in 1913 they were \$63,704,-832. Silver imported in 1914 amounted to \$25,959,187; in 1913 the silver imports were \$35,867,819.

PUBLIC ENEMIES

If you build a line of railway over hills
and barren lands,

Giving lucrative employment to about a
million hands;

If you cause a score of cities by your
right-of-way to rise,

Where there formerly was nothing but
some rattlesnakes and flies;

If when bringing kale to others you ac-
quire a little kale,

'Then you've surely robbed the peepul
and you ought to be in jail.

If by planting and by toiling you have
won some wealth and fame,

It will make no odds how squarely you
have played your little game;

Your success is proof sufficient that you
are a public foe—

You're a soulless malefactor; to the dump
you ought to go.

It's a crime for you to prosper where
so many others fail;

You have surely robbed the peepul and
you ought to be in jail.

Be a chronic politician, deal in super-
heated air;

Roast the bank and money barons, there
is always safety there;

But to sound the note of business is a
crime so mean and base,

That a fellow guilty of it ought to go
and hide his face.

Change the builders' song triumphant
for the politicians' wail,

Or we'll think you've robbed the peepul
and we'll pack you off to jail

—WALT MASON, IN JOURNAL OF ELEC-
TRICITY, POWER AND GAS.

The United States exported during the seven months ending January 31, 1915, gold to the value of \$139,333,130; for the corresponding period of 1913, \$34,978,050; for the corresponding period of 1912, \$31,265,654. Silver was exported during the seven months ending January 31, 1915, to the amount of \$31,280,552; for the corresponding period of 1913, \$33,464,392; for the corresponding period of 1912, \$44,728,447.

PERSONALS

Dr. J. A. Holmes, Director of the Bureau of Mines will spend the summer in Denver.

W. W. Fleming is giving first-aid demonstrations before classes in metal mining at the Oklahoma State School of Mines.

N. V. Breth, of the Bureau of Mines, has been investigating electrical shot firing in Kansas and Oklahoma coal fields.

R. H. Kudlich, of the Bureau of Mines, is making a field study of safety catches, hoisting rope practice, cage skip design, overwinding devices, and all elements of the problem of safety in hoisting men. Mr. Kudlich will confine his attention to the Western camps on this trip.

H. G. James, of Kansas City, secretary of the Western Petroleum Refiners' Association, spent several days in Washington recently, on business.

H. N. Emmons, of the Tennessee Copper Company, was a business visitor to the capital recently.

Honduras is a country rich in gold, although mining operations there have never been conducted with modern equipment or by present-day methods. There is hardly a stream in the republic but will pan gold from its sands. All prospectors agree that, with the extension of railroads into the interior, making possible the introduction of heavy mining machinery, many mines will be developed into richly paying investments. No other mineral than gold is sought or mined.

According to recent consular reports Manchuria is becoming a good field for the sale of American mining machinery and supplies. Inquiries on the subject may be addressed to United States Consul General, Mukden, China.

UNCLE SAM is conducting a multitude of activities which have a bearing on mining. Men engaged in this industry cannot afford to be out of touch with this work.

The Mining Congress Journal, the official organ of the American Mining Congress is covering the Washington field carefully in its news columns. It offers a ready means of keeping you informed as to the efforts the Government is making in your behalf.

It is important not to forget that matters develop in the capital which menace your best interest. It is advantageous to know of these things in time to counteract them.

The Mining Congress Journal covers Congress, the Bureau of Mines, the Geological Survey, the Interstate Commerce Commission, the Supreme Court, the Land Office, the Patent Office, the Department of Labor and the other Federal offices where the work affects the mine owner or operator. State mining legislation and current decisions are featured. There are many other interesting features as to mines in the Journal.

Can you afford to be without this service?

The American Mining Congress

The American Mining Congress is a voluntary association supported by the dues and fees of its members. It is striving to bring about:

First—Safety and efficiency in mining operations.

Second—Intelligent conservation with a view to the highest development and use of our mineral resources.

Third—The stimulation of investment in practical mining operations by showing that mining is a legitimate business when intelligently conducted.

Fourth—Uniformity in state laws governing mining operations carried on under like conditions.

Fifth—Such federal co-operation through research and investigation as will furnish the basis for intelligent state legislation, and will solve those problems of economical production, treatment and transportation which are essential to an increase in mineral production.

Sixth—The improvement of the economic conditions underlying the coal mining industry.

If you are interested in this work, now is the time to help; do not wait until those who are now carrying the burden have become discouraged.

The appended application blank will show the way. Come in and bring the neighbor who should join this movement. Mail application to

THE AMERICAN MINING CONGRESS

Munsey Building, Washington, D. C.

THE AMERICAN MINING CONGRESS

APPLICATION FOR MEMBERSHIP

.....191.....

I hereby make application for membership in THE AMERICAN MINING CONGRESS and agree, if accepted, to abide by the By-Laws, Rules and Regulations of said organization and to pay the dues required by same.

Name.....

Occupation.....

P. O. Address.....

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LEHIGH & WILKES-BARRE COAL CO.'S

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THE MINING CONGRESS JOURNAL

JULY

CONTENTS

1915

INSURANCE COMPANIES COMBINE	309
ZINC ORES HELD DUTIABLE.	311
DEMAND FOR NITRATES PROMISES TO INCREASE.	312
E. F. BURCHARD PROMOTED	312
PROSPECTING FOR PLATINUM INCREASES	313
MEXICANS STUDY U. S. PETROLEUM CONDITIONS.	314
USE OF PERMISSIBLE EXPLOSIVES INCREASES.	314
MONUMENT TO MAJ. POWELL.	314
SULPHUR BREAKS RECORD	315
AREA OF DOUBLE HOMESTEADS INCREASED.	315
FOREST SERVICE DEFENDS ITS MINING REGULATIONS.	316
GOVERNMENT EXPERTS SEARCH FOR SOURCES OF AMMONIA	317
PRESIDENT NAMES MINING CONGRESS DELEGATES.	318
SENATOR WALSH LIKES BUREAU OF MINES EXHIBIT	318
COLORADO COAL FIELD TO BE SURVEYED	318
TEXAS SULPHUR BEING DEVELOPED	319
MINING STATISTICS COVER MORE GROUND	321
TUNGSTON PRICES SPUR PROSPECTING	321
MONTANA LIGNITES TO BE EXAMINED	322
MINERAL ANNUALS TO COOPERATE	323
WORLD'S LARGEST MINING LIBRARY.	324
CONSTRUCTION WORK STARTS ON ALASKAN RAILROAD	325
PHILIPPINES EXPECTED TO PRODUCE MORE GOLD	326
RADIUM PROBLEMS DISCUSSED IN REPORT	326
PROMINENT MINING MEN TO DIRECT FIRLED MEET.	327
RECENT LEGAL DECISIONS	328
SUSPECTED PLATINUM CLAIMS INSPECTED	329
HELP SAVE BLACK HAWK MINE FROM FIRE.	330
EDITORIALS	331
RECENT LEGAL DECISIONS	335
TRAFFIC DEVELOPMENTS OF THE MONTH	342
POTASH DISCOVERED IN TEXAS	343
MINING PATENTS	346

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To the Members of the American Mining Congress:

Do you know that you are the owners and publishers of the MINING CONGRESS JOURNAL? We trust you will realize the responsibility of this ownership and that you will lend your active assistance in making the Journal a greater success.

Real mining men should be active members. An application blank will be found on another page of this issue.

Associate memberships are designed for those not actively interested in mining, but who are willing to assist a state Chapter of the Mining Congress in helping to develop the Mining industry within the State. All memberships include subscription to the MINING CONGRESS JOURNAL.

Every member of the Mining Congress should undertake to send in at least one application each month. Will you help by having the following blank filled in and mail to this office?

SUBSCRIPTION AND APPLICATION FOR ASSOCIATE MEMBERSHIP
IN THE
AMERICAN MINING CONGRESS

.....191.....

I hereby make application for Associate Membership in THE AMERICAN MINING CONGRESS, and agree, if accepted, to abide by the By-Laws, Rules and Regulations of said organization and to pay the dues required by same. Herewith find \$1.00 fee and \$2.00 dues for one year, including subscription to the Mining Congress Journal (\$1.00 of which is designated as subscription to Journal).

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THE MINING CONGRESS JOURNAL

Official Organ of the American Mining Congress

TEN IMPORTANT COMPANIES ARE COMBINED TO UNDERWRITE COAL RISKS

**Coal Mine Insurance Association Formed with Herbert M. Wilson at its Head.
New Director Has Been Active in Bureau of Mines Work—
Low Rates to be Premium for Safety Methods.**

Ten strong American and British insurance companies have associated themselves for the joint underwriting of coal mine accident insurance. Herbert M. Wilson has been selected as the director of the new association. Mr. Wilson is the engineer who has had charge of the Pittsburgh experiment station of the Bureau of Mines. He has been associated with the inception and development of this bureau. Previous to the formation of the Bureau of Mines, Mr. Wilson was chief geographer in the Geological Survey. The insurance organization he will head is to be known as the Coal Mine Insurance Association.

IMPORTANT WORK

It is the opinion here that the formation of this insurance association is an event of unusual importance in the coal mining industry. It will have a very great influence with regard to safety work in mining, it is believed.

The formation of the association is to meet the necessity imposed on mine operators by workmen's compensation legislation.

It has been demonstrated to the satisfaction of insurance men throughout the

country that State insurance bureaus cannot safely risk general coal mining hazards. They cover too limited a territory to allow the untrammelled working of the law of averages. In many States the insurance bureaus have no intention of competing with legitimate private insurance business and are perfectly willing to withdraw if fair rates and ample protection is offered by private companies. It also has been shown that mutual insurance associations are not qualified to offer reasonable rates of insurance to coal mines.

COOPERATION NECESSARY

Due to the possibility of a great catastrophe, the stock companies have been very slow to underwrite coal mine risks. They realize that separately they could not offer reasonable rates. This objection promises to be overcome, however, by the union of strong companies.

The companies associated in the Coal Mine Insurance Association are as follows: The Aetna Accident and Liability Company, Hartford, Conn.; Aetna Life Insurance Company, Hartford, Conn.; The Employers' Liability Assurance Corporation, Ltd., of London, Eng., United States Branch, Boston, Mass.; Hartford Accident and Indemnity Company, Hartford, Conn.; London Guarantee & Accident Co., Ltd., of London, Eng., United States Branch, Chicago, Ill.; Maryland Casualty



HERBET M. WILSON

Director of the Coal Mine Insurance Association

Company, Baltimore, Md.; The Ocean Accident & Guarantee Corporation, Ltd., of London, Eng.; United States Branch, New York, N. Y.; The Standard Accident Insurance Company, of Detroit, Mich.; The Travelers' Indemnity Company, Hartford, Conn.; The Travelers' Insurance Company, Hartford, Conn.

LOW RATES OBTAINABLE

One of the important features of the work of the Coal Mine Insurance Association is the organization of mine inspection which will be qualified thoroughly to pass on the risks. It is the announced intention to encourage the adoption of safety measures in mining by the quoting of low rates where precautions are taken for the safety of the men and for the minimizing of chances for damaging the property.

Mine owners have been worried in the calculation of their costs by the unknown element of workmen's compensation. It has been impossible to anticipate what charges must be made against production as a result of casualties. This new organization will make possible the stabilization of this item of the cost of production.

HAVE HUGH ASSETS

The companies forming the association represent combined capital and surplus of more

than \$62,000,000 and combined assets of over \$255,000,000. In the selection of a director the companies felt the necessity of securing a man who is known in the mining industry and who has had no affiliation with any insurance company or other business organization. Mr. Wilson has been very prominent in the Government's work in the interest of the mining industry and is recognized as a man of very decided ability. He has been interested greatly in the adoption of safety practices in mining.

One of the claims of the company is that the association intends to make rates so low that no profit shall accrue to it. Any profit derived is to come from the investment of its funds.

DR. HOLMES PLEASED

Among those who have expressed great satisfaction at the organization is Dr. Joseph A. Holmes, Director of the Bureau of Mines. If the company is directed properly he believes that it will be an important factor in having introduced into mines those safety measures developed by the Federal Bureau which are of advantage to workmen and operators alike.

The assistance of mine operators, of State operators and of mine workers is to be solicited in overcoming the difficulties in developing a satisfactory schedule of rates in every State having a workmen's compensation law.

Mr. Wilson was educated in mining as well as civil engineering, graduated from the School of Mines, Columbia University, New York. He has spent the last eight years in developing mining experiments, including the use of explosives, experimental investigations in electricity and lighting, and especially in the mine safety, mine rescue and first-aid operations of the Federal Bureau of Mines.

Evidencing his interest and activity in matters of safety, he is on the Advisory Council of the Underwriter's Laboratory, Chicago; he is one of the organizers and is on the Executive Committee of the National Safety Council, and was the first president and is now the secretary-treasurer of the American Mine Safety Association. He is familiar with the coal mining industry in every State, having personal knowledge of many of the mines.

WAR HURRIES DEVELOPMENT OF CHROMIUM DEPOSITS

Development of chromium deposits in the United States is making rapid progress as a result of the war, which has cut off the foreign supply. California is the source of the greater part of the chromic iron ore in the United States although its production in other States is increasing.

Chromic is used extensively in lining furnaces. It fuses at a very high temperature.

It is a source of green and yellow dyes. It is used in the tanning of leather and is employed extensively in the manufacture of steel to increase its hardness. J. S. Diller, of the Geological Survey, predicts that the development of this metal will increase rapidly in the United States.

ALL ZINC IN COPPER ORES ARE HELD TO BE DUTIABLE

Customs Appraisers Hand Down Decision Overruling Protest of United Metals Refining Co.

An important decision in the matter of zinc in zinc-bearing ores has just been rendered by the United States General Appraisers. The ruling was made as a result of a protest by the United Metals Refining Company against the assessment of duty. The appraisers find that the zinc content, in the amount specified, is dutiable regardless of the fact that the zinc may not be recoverable commercially and may be a decided detriment in that it reduces the value of the copper ores.

General Appraiser Fischer rendered the opinion, which is, in part, as follows:

The merchandise in question consists of containing zinc in percentages varying from 3.60 to 7.30 per cent. Duty was levied on the zinc content at the rate of 10 per cent. ad valorem—upon an appraised valuation thereof at 4 cents per pound—under the provisions of Paragraph 162 of the act of 1913, and the importer claims that said ore is properly entitled to free entry under the provisions of Paragraph 461 of said act on the ground that the quantity of zinc contained therein is negligible and not capable of being recovered or used.

An analysis of the ore contained in the various shipments in question was made by a chemist in the laboratory attached to the office of the appraiser at the port of New York, and upon the basis of his returns the assessment here complained of was made. That official, as well as the United States examiner attached to the same office, and who passed the ores in question, testified that the quantity of zinc contained in said ores was negligible.

There is also before us uncontradicted testimony that in smelting copper ores it is commercially impossible to recover zinc where the percentage thereof is as low as it is shown to be in the merchandise at bar; that as matter of fact the presence of zinc in such small quantities actually proves to be a detriment rather than an advantage, in that it tends materially to lessen the value of the copper ores. As corroborative of this view, counsel for the importer invites attention to a circular issued by the Treasury Depart-

ment and published as T. D. 34,280, wherein classifying officers are advised to appraise as of no value ores containing zinc in quantities found not to be commercially recoverable, or where it is shown that the zinc content actually proves to be a detriment to the extent of lessening the value of the ores.

Counsel for the Government contends that the protests should be overruled, for two reasons: (1) That, inasmuch as the zinc content was appraised at 4 cents per pound, it cannot now be held to be of no commercial value; (2) that the provisions of law were intended to apply to and cover the zinc content as found in the ore in its imported condition, without reference to the quantity thereof, which may or may not be determined to be commercially recoverable.

The question of the dutiability of the zinc content of ores was affirmatively decided by this board in G. A. 7,049 (T. D. 30,727), said ruling being subsequently upheld by the United States Court of Customs Appeals in Consolidated Kansas City Smelting & Refining Co. v. United States (1 Ct. Cust. Appls., 472; T. D. 31,509). That case arose under the tariff act of 1909, and involved the question whether ore containing lead and zinc, the latter over 10 per cent., was properly classifiable for duty based upon the ascertained quantities of both metals, the lead under Paragraph 181 and the zinc under paragraph 193 of said act. After quoting at considerable length from the testimony to show "that ores may be both zinc-bearing ores and lead-bearing ores, and that each of the ores may be recovered and the ore profitably manipulated for their recovery by the process of concentration and smelting several ores by the appropriate method, the court further said:

"... It is very clear from this that it was within the contemplation of Congress that ores which required mechanical treatment to concentrate them in preparation for the retort used in reclaiming the zinc should be dutiable in their crude state. Indeed, this language requires that all ores containing a greater quantity than 10 per cent. of zinc must be treated as zinc ores and assessed under Paragraph 193. As is pointed out by the Board of General Appraisers in their opinion, Congress has provided for a duty on the metal content of ores rather than on the recovered metal itself."

In enacting Paragraph 162 of the present act it is clearly manifest that Congress intended not only to adopt as correct the judicial interpretation of the language of Paragraph 193 of the act of 1909, but to further narrow its applicability and scope. Hence, we find omitted from the present paragraph this provision "containing less than 10 per centum of zinc" found in its predecessor in the act of 1909. There can, therefore, be no question whatever concerning the congressional intention to impose a duty of 10 per cent. ad valorem upon zinc-bearing ores of all kinds, including calamine, regardless of the quantity of zinc which may

or may not be shown to be commercially recoverable.

In *United States v. Marsching* (1 Ct. Cust. Appls., 216; T. D. 31,257), Judge De Vries, speaking for the court, said:

"We do not think that in a case like this where the essential words supporting the construction contended for have been expressly omitted by Congress, the courts can by any rule or method of construction read back into the act such words."

This rule was recently followed by this board in the matter of the protest of Carl Fischer, decided in G. A. 7,722 (T. D. 35,382), wherein certain catgut strings composed in chief value of silk were held to be properly dutiable as manufactures of silk under Paragraph 318 of the present act, as assessed, rather than as strings for musical instruments under Paragraph 373 of said act, as claimed. It developed in that case that Congress deliberately omitted from the present Paragraph 373 the provision for strings for musical instruments, not otherwise enumerated which appeared in Paragraph 467 of the act of 1909, but left therein the provision for strings for musical instruments, composed wholly or in part of steel or other metal. This change in language clearly manifested the Congressional intention to limit the provision in the present act solely to the latter class of strings. The board there found support, as we do here, in the well settled principle of law that "*expressio unius est exclusio alterius*."

We do not consider the other ground of objection advanced by Government counsel as worthy of serious consideration. If his contentions were sound, no protest claiming free entry could be sustained, inasmuch as all such protests are lodged against an assessment of duty levied as a result of an appraisal and determination of the dutiable value of merchandise.

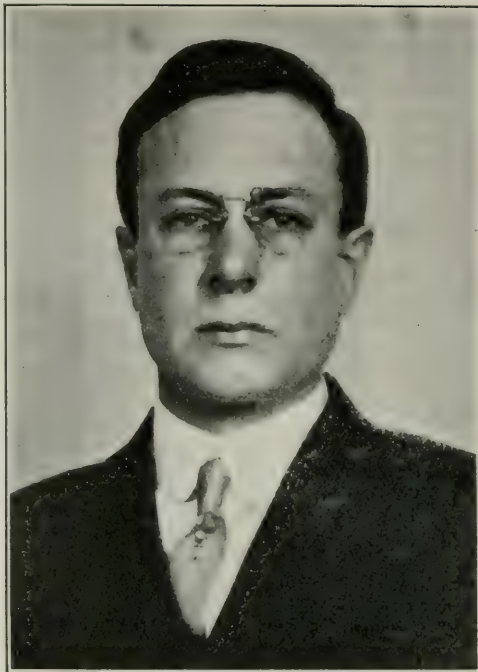
The protests are accordingly overruled and the decisions of the collector are affirmed.

DEMAND FOR NITRATES PROMISES TO INCREASE

Increasing amounts of nitrate are passing through the Panama Canal from Chilean ports to Atlantic coast points and to Europe. Reports to the Panama Canal office here indicate that nitrate will continue to move through the canal in increasing quantities. This is due to the cutting off of the European supply of fertilizer material.

Coal is moving through the canal from Baltimore and Newport News to Peru and Chili and to Pacific ports of the United States.

Some copper from western ports of the United States is passing through the canal destined to Europe and to Atlantic ports of the United States. Antimony is moving from Chili to Liverpool. A small lot of bismuth moved from Antofagasta to Liverpool. Iron ore to the amount of 14,704 tons moved from Cruz Grande to Philadelphia.



E. F. BURCHARD

Geologist just promoted to be head of non-metal division of the U. S. Geological Survey

E. F. BURCHARD HEADS GEOLOGICAL SURVEY SECTION

As a result of the resignation of Edward W. Parker, statistician and chief of the Mineral Resources Division of the Geological Survey, and the general promotions which have been made as a consequence, E. F. Burchard has been selected as geologist-in-charge of the non-metals section.

Mr. Burchard secured his training at Lehigh and Northwestern Universities. He was connected with the Wisconsin Survey after completing his scholastic work. He entered the service of the Federal Survey in 1904.

He stands high with mining engineers throughout the country as a result of his work on the economic geology of Appalachian iron ore. He did some notable work on the lead and zinc ores of Arkansas and Wisconsin. In addition, he has made studies of various problems having to do with manganese.

Referring to Mr. Burchard's appointment, George Otis Smith, director of the Survey, said: "Mr. Burchard is one of the men who has come forward from time to time with progressive ideas for the improvements of mineral resource reports."

Coal Exports Increase

Figures from the Department of Commerce show that coal and coke are being exported at a considerably greater rate than for the corresponding period of last year.

INCREASED PROSPECTING IS EXPECTED TO DEVELOP MORE PLATINUM

Discovery of This Rare Metal in Nevada Has Led to Extended Search for Greater American Supply—Government Geologist Reports on Investigations—Boss Deposit Differs from Others.

Judging from information reaching the Geological Survey more prospecting is being done for platinum in the United States at the present time than ever before. In part this activity is due to the reduction of exports of this metal from Russia. Much impetus, however, has been given the movement by the discovery of several important deposits of platinum in Nevada and California.

DISCOVERIES EXPECTED

At the Geological Survey, Adolph Knopf is devoting a great deal of his time to the study of platinum. He is the author of Bulletin 620 issued last month, which treats on recently discovered platinum in southern Nevada. He is of the impression that platinum exists in many places in the United States and he will not be surprised if several important deposits are discovered as a result of the present prospecting activity.

Owing to the increasing use of platinum in laboratories, in jewelry and by dentists, as well as by arts and industries the demand for this metal is certain to increase.

With reference to his recent work on the Nevada platinum, Mr. Knopf has made the following synopsis:

NEVADA DEPOSITS

Platinum and palladium were found in 1914 to be present in certain of the ores of the Yellow Pine Mining District, in Clark County, Nev. The first, and by far the most important discovery, was made at the Boss Mine, and later in the year platinum was found to occur also in the ore of the Oro Amigo Mine.

The ore deposit on the Boss Claim was discovered some thirty years ago, having been located for copper, the presence of which is plainly indicated by chrysocolla and other oxidized copper minerals. In the nineties a leaching plant was built at Goodsprings, twelve miles from the mine, and an attempt was made to treat the oxidized copper ore, but the process proved a failure. Not until recently was the gold and platinum content of the ore recognized. The failure to recognize, or at least fully to appreciate, the gold-bearing character of the ore seems to have been due to the fact that much of the gold is very finely divided and cannot be obtained by panning, and also to the fact that some of the extraordinarily rich material when panned yields a black residue that might easily be and probably was thrown away as

worthless black sand. Systematic sampling of the deposit early in 1914 led to full recognition that gold is present in valuable amount, and it was during the course of this sampling that the platinum and palladium content of the ore was discovered.

THE BOSS DEPOSIT

The deposit at the Boss Mine consists of a fine-grained quartz mass, which forms in the main an irregular replacement of carboniferous dolomites along a series of vertical fractures. A small mass or dike of granite porphyry intrudes the dolomite about 600 feet north of the mine, but no basic intrusives occur; in fact none are known to occur in the whole district, which is the most productive lead zinc district in Nevada. The ore bodies so far developed may be briefly characterized as oxidized copper shoots and gold-platinum-palladium shoots. The copper ores consist largely of chrysocolla and other oxidized compounds, but these ores carry only minor amounts of the precious metals. The gold-platinum-palladium shoots consist of a fine-grained quartzose ore containing a small quantity of a bismuth-bearing variety of the rare metal, plumbojarosite (a hydrous sulphate of iron and lead).

CARRIES GOLD AND SILVER

The principal ore shoot, so far as present workings disclose, forms an irregular pipe pitching at a low angle to the northeast. In this shoot from 1,000 to 2,000 tons of ore had been developed at the time of visit, which average in ounces to the ton: gold, 3.46; silver, 6.4; platinum, 0.70, and palladium, 3.38. The precious metals are especially associated with the plumbojarosite; pockets of the pure mineral carry 100 ounces or more of platinum and palladium and several hundred ounces of gold to the ton. This exceeding richness points to a concentration of the precious metals in the oxidized ore by surface solutions, so that in depth the pockets of extremely high grade ore, such as are now being extracted, will give place to ore of moderate grade. The only sulphide so far found in the mine is chalcocite, and this is probably of secondary origin.

DIFFERS FROM OTHERS

The gold-platinum-palladium deposit at the Boss Mine differs strongly from any heretofore described deposit carrying platinum

metals. Further, its probable genetic connection with siliceous igneous rocks is highly remarkable, inasmuch as the primary platiniferous deposits are as a rule genetically associated with basic igneous rocks. The Boss lode is one of the few primary deposits in which platinum metals occur in more than traces, and with one possible exception (the new Rambler Mine in Wyoming), is the only primary deposit of economic importance in which these metals are the constituents of predominant value.

MEXICAN DELEGATION STUDIES U. S. PETROLEUM CONDITIONS

A delegation from Mexico has been investigating conditions surrounding the production of petroleum in this country.

The commission is headed by M. C. Rollard, minister of fomento in the Carranza cabinet. The principal oil-producing territory of Mexico, which is in the vicinity of Tampico, is dominated by the Carrancistas. The commission is engaged in looking into the details of American law governing the production of petroleum.

As this Government has not recognized the Carranza government, the commission was not received officially at Washington. However, at the Bureau of Mines, they were received as distinguished foreign scientists and given every facility for becoming familiar with information on file on the Bureau, and matters within the knowledge of its experts.

Following several conferences at Washington, the commission started on a tour of the producing and refining centers of this country. This was done at the suggestion of Dr. D. T. Day, so that they might understand the expense necessary to bring crude oil to its final products.

There has been a tendency in Mexico to place a heavy tax on crude oil. It was pointed out that under present conditions, crude oil will not stand any great amount of taxation.

BEGIN THIRD YEAR'S WORK IN WYOMING COAL FIELD

A detailed examination of the coal field in Carbon County, Wyo., is to be continued this summer. Work has been in progress for the last two years. Charles F. Bowen and C. A. Onine have been assigned to this work by the Geological Survey.

Gets \$363.70 Reparation

Reparation amounting to \$363.70 has been awarded to the Parkinson Coke & Coal Co. in its case against the New York Central & Hudson River R. R. Interest from December 15, 1912, also was ordered. The case covered coke shipments from Geneva, N. Y., to Brooklyn.

USE OF PERMISSIBLE EXPLOSIVES SHOWS INCREASE

The total production of explosives in the United States during the year 1914, exclusive of exports, according to figures compiled by Albert H. Fay, of the United States Bureau of Mines, was 450,251,489 pounds or 225,126 short tons, as compared with 500,015,845 pounds or 250,008 short tons for 1913. The production for 1914 is segregated as follows: Black powder, 206,099,700 pounds; "high" explosives other than permissible explosives, 218,453,971 pounds; and permissible explosives, 25,697,818 pounds.

The figures represent a decrease of 23,839,831 pounds of black powder; 23,932,573 pounds of high explosives; and 1,987,952 pounds of permissible explosives, as compared with 1913.

Mr. Fay says: "As explosives are essential to mining, and the use of improved types of explosives tends to lessen the dangers attending this industry, the Bureau of Mines undertook the compilation of information showing the total amount of explosives manufactured and used in the United States, its first report dealing with the year 1912. The report for 1914 is therefore the third technical paper issued by the Bureau relating to the production and distribution of explosives.

"In the year 1902 only 11,300 pounds of permissible explosives were used in coal mining, whereas in 1913 the quantity so used was 21,804,285 pounds, as compared with 19,593,892 pounds in 1914. The quantity of permissible explosives used in the United States is larger than in a number of foreign countries. In 1912 it represented about 5 per cent. of the total quantity of explosives produced and in 1914, 5.7 per cent. The total amount of explosives used for the production of coal in 1914 was 220,622,487 pounds, of which about 8.9 per cent. was of the permissible class, as compared with 9.5 per cent. in 1913."

ERECTION OF MONUMENT TO MAJ. POWELL DELAYED

The erection of a monument to Maj. J. W. Powell, former director of the Geological Survey, has been delayed by a lack of funds and difficulties arising in regard to the site.

The \$5,000 available for the monument, which is to be erected on the rim of the Grand Canyon, is not sufficient to erect a memorial shaft in keeping with the grandeur of the surroundings, those in charge of the project believe.

Plans are being considered whereby additional money may be secured to make the memorial a more fitting one. The site was selected by Dr. Holmes, of the United States Bureau of Mines sometime ago, but it develops that the spot selected is on a mining claim. An effort is being made to prove that this is not a bona fide mineral location.

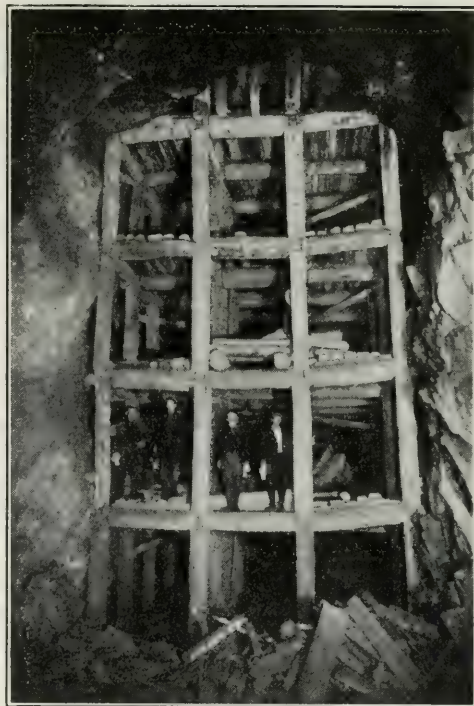
REPORT MADE ON EXPLOSIVE GASES IN COAL MINES

Another extensive work, expected to meet a considerable demand among coal mine operators, just has been published by the Bureau of Mines. It has to do with the occurrence of explosive gases in coal mines. It is the work of N. H. Darton, formerly of the Bureau of Mines, but now of the Geological Survey.

The investigations on which the work is based were conducted in Pennsylvania and Illinois, where typical conditions are met. The anthracite basin of northern Pennsylvania was made the scene of a portion of the investigation. The coal beds in this section are considerably bent, whereas the beds in the southern part of the bituminous field of Illinois lie horizontally.

Conditions which control the escape of gases in coal; the character of mine gases; the nature of gases in coal beds; conditions under which gas is given off by coal; crushed coal; the cause of gas outbursts; gas from squeezes; methane and coal; pressure of gas in coal beds, and the effect of rock and water pressure on gas in coal are a few of the important questions which are discussed in this 250-page report.

Another interesting feature is an outline of the conditions as found in representative mines. Experiments were conducted in a large number of the mines in the anthracite district and in the southern Illinois district as well.



TIMBERING IN STOPE OF HOMESTAKE MINE, S. D.

SOUTHERN IRON DEPOSITS SUBJECT OF CLOSE STUDY

Iron ore deposits in Tennessee, Alabama and Georgia are being studied by E. F. Burchard, a geologist with the United States Geological Survey. Mr. Burchard left for the South recently and has engaged a prospector to work with him. He will make cuts across ore beds and do other detailed work with the idea of determining the quality and quantity of the iron deposits in several sections of the States mentioned.

SULPHUR BREAKS RECORD

Increased Value in 1914 Nearly Half-Million Dollars Over That of 1913

The marketed production of sulphur in the United States in 1914, according to the United States Geological Survey, was 327,634 long tons, valued at \$5,954,236, the greatest in the history of the industry. This production was 16,044 long tons greater than that of 1913 and showed an increase in value of \$474,387. The sulphur mined in 1914 but stocked at the mines is not included in these figures. In 1914 four States produced sulphur, namely, Louisiana, Texas, Nevada and Wyoming.

The total imports for 1914, entered for consumption, were 26,135 long tons, valued at

\$477,937, of which 23,610 tons, valued at \$398,984, were crude sulphur. Corresponding figures for 1913 were 22,605 long tons, valued at \$448,564, of which 15,122 tons, valued at \$286,209, were crude sulphur. In 1914 the great bulk of the imports were, as usual, from Japan.

In 1914 the exports were 98,153 long tons, valued at \$1,807,334, and they would probably have been considerably greater but for the disturbed conditions in Europe. Even with such adverse conditions, the excess of exports over imports amounted to 72,018 long tons, the balance of trade in favor of the United States being \$1,329,397.

AREA OF DOUBLE HOMESTEADS IS INCREASED DECIDEDLY

The total area that has been designated for entry as homesteads of double the usual size, that is 320 acres, now amounts to over 236,880,000 acres. These designations were made as a result of classification of non-irrigable lands. In order to double the size of the homesteads the law provides that the lands must be non-irrigable.

The amount of land available for double homesteads was increased by 2,380,000 acres during May, resulting from classifications just passed upon.

FOREST SERVICE BELIEVES ITS REGULATIONS NO BAR TO LEGITIMATE MINING

**Takes Pride in Fact That No Appeal Has Been Made By Committee on Forest
Relations of American Mining Congress—Miners
Anxious to Eliminate Unscrupulous**

Officials of the Forest Service are taking all steps within their power to encourage the development of mineral deposits within the national forests. Every effort will be made to encourage prospecting and extensive development. Timber will be furnished for legitimate purposes.

Forest Service officials feel that a misunderstanding of their attitude has been caused by the action which it has been necessary for them to take in several mining cases. They have found it necessary to proceed vigorously against the holders of certain mining property located in the national forest, but this has been due, they say, to attempts made to take advantage of mining privileges in order to extort money from others, or to be in a position to offer opportunities for illegitimate advantages.

AN EXAMPLE

In one case to which considerable publicity has been given, mining properties were located in the mouth of a gorge which furnished the only outlet to an extensive tract of timber. This timber has been damaged by fire, and in order to realize on it prompt removal was necessary. After some difficulty, the Forest Service found a buyer for the fire-killed timber. The lumber company started logging operations immediately, only to find that permission to haul the logs out of the valley was denied by the owners of the mining properties. A considerable sum was demanded from the lumber company for the right of passage over the claims located in the gorge.

Faced by difficulties of this kind, the lumber company suspended its operations, and demanded that the Government rescind the contract.

EXAMINE CLAIMS

This led to an appeal to the Department of Justice and a dispatch of agents to the site of the difficulty. They claimed that mineral is not present in amounts to justify operation in the remote location of the mining properties.

So far as is shown by the record of this case, the owners of the mining property have ceased to put obstacles in the way of the lumber company, and the road across the mining claims is being used at present, in the removal of this timber. Should any further objection be raised, however, the Department of Justice has been instructed to proceed with

all vigor against the owners of the mining property.

Several cases have come up recently which have led mining men, in some cases, to believe that the Forest Service is being unduly drastic in its administration of mineral lands located in the national forests. The Forest Service points out, however, that an arrangement was made with the American Mining Congress for cooperation with its Committee on Forestry Relations. To date, no appeal has been made to the Forest Service by this committee.

SUB-COMMITTEES NAMED

Forestry committees, to act with the main Mining Congress committee, were appointed in each State having forest reserves. These committees were instructed to investigate all cases where undue hardship was being imposed by regulations enforced by the Federal Forest Service. Officials of the Forest Service stated recently that they are gratified highly that not a single appeal has been made by the Forestry committee. They take this to mean that no injustice is being done to legitimate mining. They point out that the mining industry is equally anxious to be rid of unprincipled men who will take advantage of privileges extended, with the idea of developing natural resources, to handicap other men's activities, and attempt to extort money from the unfair advantage held.

PROSPECTING IN UNFAVORABLE LOCALITIES IS PREVENTED

Extensive work is to be taken up again in the near future in the San Juan Mountains, of Colorado. Whitman Cross and a party will leave Washington soon to continue the geological work in that region.

Mr. Cross has been conducting this work for several years, and a number of geological folios have resulted from the work. Several of these have been published.

The district in which the work is being done contains a number of mining camps producing mainly, gold, silver, lead, zinc and copper.

The work of Mr. Cross in this district has been of the greatest service to the mining men of that section, it is declared. The investigations of the geologists have prevented a large amount of prospecting in unfavorable localities.

GOVERNMENT EXPERTS SEARCH FOR SOURCES OF AMMONIA

Look to Country's Great Peat Beds for Supplies of Nitrogen

Dr. Chas. A. Davis, of Bureau of Mines, Pursuing Promising Line of Research

Spurred by the country's increasing need of ammonia compounds, the Bureau of Mines is conducting experiments looking to the use of peat and coal as sources of supply. Since the opening of the European war, the imports of ammonium sulphate have been negligible. During the same time the local demand has been increasing.

Ammonium sulphate is used in most fertilizers. Its value as a fertilizing agent is regarded as second to none, and there is an increasing demand for it for this purpose.

In practically all peat there is a certain amount of combined nitrogen. This seldom runs less than 1 per cent. and oftentimes reaches nearly 4 per cent. Nitrogen also is present in coal in percentages which permit, in most cases, of its recovery with probable profit.

GAS CLEAR PROFIT

In Germany and Italy ammonium sulphate has been recovered successfully from producer gas made in the Mond type of gas producer using peat fuel. It has been so successful that large central power plants find that the cost of operation has been paid by the ammonium sulphate recovered, leaving the gas as clear profit. This gas in one plant is used in gas engines for the generation of electrical energy. In others it is used for the generation of steam and for heating large dryers. It is reported from these plants that peat, which contains 1½ per cent. of nitrogen, insures profit in the operation of plants of over 2,000 horsepower.

There are many American peats containing from 2 to over 3 per cent. of combined nitrogen. Analyses show these peats to be well suited for use as fuel in properly constructed gas producers.

Ammonium sulphate also is recovered from illuminating gas works in the purification of coal gas and in by-products in the Recovery type of coke ovens.

INTEREST IN COAL TAR

Owing to the large amount of peat in the United States, considerable interest is being developed in the manufacture of coal tar products.

Fertilizer manufacturers are firm in their belief that ammonium compounds are by far the most adaptable sources from which to secure nitrogen.

A process has been developed which is being used commercially at a number of places for the recovery of ammonium. The most notable is in operation in South Africa, where it is being supplied from a coal deposit which contains a high percentage of nitrogen.

The experiments at the Bureau of Mines are in charge of Dr. Charles A. Davis, who has charge of the division of fuel technology. Dr. Davis also is editor of the journal of the American Peat Society.

As We Appear to Another

From Mining Science

For several months the American Mining Congress has issued from Washington an official periodical called the MINING CONGRESS JOURNAL. It is conducted under the enlightened editorship and management of James F. Callbreath, the secretary of the organization, who has enjoyed much prior experience as a publisher. We think the need for this monthly journal is shown by the dubious experience which the mining industry has had with the legislative and executive powers, both of the mining States and the nation. The design of the JOURNAL is to keep the membership and the mining interests generally more fully posted concerning those public doings which are of vital importance to them. There are scores of Federal and local activities which escape the notice of those necessarily concerned, for the reason that few, if any, journals lay sufficient emphasis upon them. It is notorious that the city newspapers of general circulation are not only useless but harmful to the serious-minded person, because, while neglecting to give important information, they are at the same time making the pretense of thoroughness and thus deceiving their readers. The honest city daily would be one which carried the following legend at the head of its editorial page: "We do not profess to be published with any other idea than that of making money from department store advertising. The type of readers who consult department store advertising, usually women, is of the kind that seeks entertainment rather than instruction from our pages. Accordingly we do not profess to conduct anything but a vaudeville performance. Persons who take life seriously, and really desire to keep posted upon the affairs of the world, should look elsewhere." Moreover, it may be said that no publication whose life is dependent upon advertising revenue can afford to devote itself exclusively to a narrow rut of information. There is a point where news approaches the quality of official reports, designed for special interests. Mining men are like shareholders in a great industry, to whom the detailed affairs of that industry in documentary form are apt to be welcome. We look upon the MINING CONGRESS

JOURNAL as a sort of "court circular" for the special interest of the mining man in legislative circles, although it possesses the editorial qualities that entertain as well as instruct. The membership of the Congress would today have less to fear from Federal encroachments and from hurtful "isms" of all kinds in State and nation, if it had long ago perceived the importance of keeping in intimate touch with the activities of Tom the Tinker. The JOURNAL is published in Washington, where it can keep its eye constantly upon both the well-intentioned official and the salary-eating nuisances who call themselves conservationists. State branches of the organization are also supplying the editor with prompt information concerning executive and legislative matters in the various commonwealths. The new publication might well have been called the "sentinel" of the mining interests.

PRESIDENT NAMES DELEGATES TO ANNUAL CONVENTION OF AMERICAN MINING CONGRESS

In accordance with the official call issued for the eighteenth annual session of the American Mining Congress, to be held at San Francisco, September 20-22, President Wilson has appointed the following delegates-at-large:

Bo Sweeney, Assistant Secretary of the Interior, Seattle, Wash., and Washington, D. C.
Thomas J. Walsh, Helena, Mont., Chairman of the Senate Committee on Mining.

Martin D. Foster, Olney, Ill., Chairman of the Committee on Mines and Mining, United States House of Representatives.

C. H. Lindley, Mills Building, San Francisco, Cal., author of a well-known work on mining law, and a recognized authority on the subject.

John P. White, 1111 State Life Building, Indianapolis, Ind., President of the United Mine Workers, the principal labor organization among the coal miners of the United States.

W. L. Saunders, 11 Broadway, New York City, President, American Institute of Mining Engineers.

W. R. Ingalls, metallurgical engineer, Hill Building, 10th Avenue and 36th Street, New York City. President, Mining and Metallurgical Society of America.

Joseph Hyde Pratt, Chapel Hill, N. C., State Geologist of North Carolina, and author of many papers and reports on economic geology.

George Otis Smith, Director, United States Geological Survey, Washington, D. C.

Van H. Manning, acting director, United States Bureau of Mines, Washington, D. C.

Japan produced 69,150 tons of copper in 1913, a record production for the Island Empire. The consumption of copper in Japan is increasing and her exports of the metal decreasing in proportion.

SENATOR WALSH IMPRESSED WITH BUREAU OF MINES EXHIBIT

Senator Thomas J. Walsh, of Montana, chairman of the Senate Committee on Mines and Mining, is impressed with the Bureau of Mines exhibit at the Panama-Pacific Exhibition. In a recent letter to Van H. Manning, acting director of the Bureau of Mines, he complimented the Bureau's exhibit highly. He says he went through "The Mine" with an old Montana miner, who was enthusiastic about what he saw and declared it to be the most interesting and instructive exhibit at the fair.

Persons returning to Washington from San Francisco declare the exhibits of the Bureau of Mines and of the Geological Survey attract more attention than any other single exhibits on the grounds. As an attractor of crowds, the daily explosion in "The Mine" continues to outdo any other feature of the fair, reports have it.

Some disappointment is expressed that more mining machinery companies did not see fit to install exhibits.

COLORADO COAL FIELD TO BE SURVEYED AT ONCE

Much development is in progress in the coal field of Routt County, northwestern Colorado. The Geological Survey is beginning a survey of this region. The county surveys in Routt County were done very poorly originally. This lead to great difficulties with regard to titles. The Geological Survey insisted that this be straightened out before its work was started. County officials have complied with this requirement, and the Federal work is to begin at once under the direction of E. C. Hancock, who is in charge of the parties now on the ground. The work will begin at Craig and will continue east along the Yampa River nearly to Steamboat Spring.

Development of the Routt County field was delayed many years owing to the lack of railroad facilities. In 1906, however, the Moffit Road was completed, giving the field an outlet. It is now supplying a considerable portion of the Denver trade. One of the objects of the present survey is to make possible the opening of land to entry in this region.

TO WORK IN WYOMING COAL AND OIL FIELDS

Attention is to be given this summer to the Powder River coal fields in Wyoming. C. H. Wegemann is the geologist in charge of the work.

In addition, Mr. Wegemann will make an examination of the Salt Creek oil fields, which are the most productive ones in Wyoming. There are two refineries at Caspar. Ralph W. Howell is another geologist engaged in this work.

SATISFACTORY RESULTS BEING OBTAINED FROM TEXAS SULPHUR DEVELOPMENT

Freeport Sulphur Company is Recovering Mineral From Beds 1,000 Feet Below
Surface by Use of Superheated Water—Boiler Plant Develops
12,000 Horsepower—Extensive Area Underlaid

While it has been a very general understanding in mining circles that the development of the sulphur beds near Freeport, Tex., has not been entirely satisfactory, a contrary view is expressed by the Freeport Commerce League. George C. Morris, the president of this organization, in a special article for the MINING CONGRESS JOURNAL, describes the operations of the Freeport Sulphur Co. as follows:

The opening of a sulphur mine at Freeport, Tex., near the mouth of the Brazos River, has given a new impetus to the sulphur industry in the United States and the splendid production that is being secured assures for this country another great source of supply of sulphur.

It has been known for years that there were deposits of sulphur at this point, but it was not until about three years ago that actual work in their successful operation began. The credit for the present progress and success of this mine is due to E. P. Swenson and associates, of New York City. Mr. Swenson was attracted by the showings occurring here and after an exhaustive study of the fields by experts, a company was organized to develop the fields. Real operation began some two years ago and the success of the production up to this time leads to the conclusion that the Freeport Sulphur mines will compare favorably with any in the world.

AT DEPTH OF 1,000 FEET

The beds are about 1,000 feet below the surface of the earth and the sulphur is contained in pockets of varying proportions. Superheated water is forced into these pockets or cavities at a temperature of 336° , under high pressure. This searches through the fissures, melts the sulphur, which flows into the suction pipe and issues into the bins upon the surface. Upon its delivery into the bins, the sulphur has the appearance of muddy water, but as the temperature cools, the colors vary until it solidifies, when it becomes the true sulphur yellow.

The sulphur produced at these mines is remarkably pure. While it is classed as crude, it is sold on a commercial guarantee of 99.5 per cent. pure, and it often grades as high as 99.9 per cent. pure.

INCREASE BOILER CAPACITY

The plant has been increased since the operation began, very materially. It now has

a boiler capacity of 12,000 horsepower, and their energy is all devoted to the operation of the plant, which is in operation day and night. It has every modern appliance and is regarded as one of the most complete plants in the country.

In order to utilize the river water, which is only a short distance from the mine, it was necessary to erect a large lime treating plant. For this purpose two large steel tanks are provided, each of sufficient capacity to contain a day's supply of reagents in solution—the amount and character being determined by daily tests of the water. These tanks are used alternately, passing contents into a dilution tank where water is added to make it easily possible to pipe solution to the entry points of the water. All tanks are equipped with agitators, which, together with the pumps for delivery of this solution, are motor driven. In connection with this treatment plant are large warehouses.

TRY EXPERIMENT

An interesting experiment is now being undertaken in the hope of effecting a large economy in heating mine water. The natural heat of the subterranean water in the formation is 105° . As the water is now delivered to the plant for heating, its temperature varies with the season from 40 to 90° . To raise this water to a temperature of 336° obviously consumes more fuel than to raise 105° . The formation water, however, carries heavy scale forming properties, and especial equipment has been designed to prevent the precipitation of this scale within the heaters or piping.

The area covered by the producing sulphur wells was somewhat increased during the year, but on the present plan of spotting wells at corners of 100 feet square, it has required only a small portion of the large area known to overlay sulphur to supply the requirements. The radius of heat influence undoubtedly varies greatly, due to the irregularity of formation. The melt of one well is often communicated to its neighbor. Several wells are kept ahead of requirements ready for steaming whenever a well is exhausted so as to have short interruption of production. As wells fail, contiguous wells are taken on, in order to get full benefit of communicated heat. At the present time two wells are being steamed at once, with the ex-

pectation that three may be steamed at the same time.

HUNT RICH SPOTS

An area of several hundred acres, chiefly under the mound known as Bryan Heights, has been demonstrated as containing sulphur, and a complete plan of carrying on investigations as to the area is under way, so that the richest spots may be located. The present output is satisfactory, but there may be territory of much greater richness than now under development, which will be determined by a systematic exploration.

The plant is admirably located, in that it is within 3 miles of the port of Freeport. This port has been improved to a depth of 18 feet. The Secretary of War has recommended to Congress that it is worthy of improvement to a depth of 25 feet.

Utah Elevations Measured.

A number of altitudes in Utah have been determined by recent investigations by the Geological Survey. Several mountains rise above the 13,000-foot level. The exact elevation above sea level of more than 900 points in Utah are shown in Bulletin 566 just issued by the Geological Survey. The highest point found in the State is King's Peak in Wasatch County, it is 13,498 feet high. Other high points in the State are Emmons Mountain, 13,428 feet; Gilbert Peak, 13,422 feet; Lovenna Mountain, 13,250 feet.

Mine Low-Grade Coal

While Michigan produces a low grade of coal, 128,330 tons were mined during 1914, according to reports issued by the Geological Survey.

Coal has been mined in Michigan since 1835, but during the greater part of this time the output has been very low, due to the competition of higher grade coals from other fields.

To Issue Molybdenum Report

A bulletin on molybdenum is to be issued this fall by the Bureau of Mines. It will deal principally with ores and their concentration. All deposits of this metal in the West were visited in collecting data for this report.

Wilson Honor Guest

A dinner was given H. M. Wilson at Pittsburgh, June 19, by his associates of the Bureau of Mines. Mr. Wilson is leaving the service to take charge of the Coal Mine Insurance Association.

Dr. Bain Is Honored.

Dr. H. Foster Bain, of *Mining Magazine*, of London, has been appointed a consulting

mining engineer for the Bureau of Mines. Dr. Bain will represent the Bureau at any international meetings held in Europe.

Frank F. Castello Dies

Cripple Creek is mourning the death of Frank F. Castello, who contributed in no small measure to the success of that great mining camp. His death occurred in Los Angeles. Mr. Castello was widely and favorably known in mining circles throughout the nation.

Georgia Mines Less Coal

Georgia coal consumption continued to dwindle during 1914. It now amounts to 166,498 tons. The Georgia production has declined steadily since an act of the legislature prohibited the use of convicts in the mines. The mines are located in an isolated section of the state, where free labor is hard to obtain.

Enjoy Mechanical Convention

The American Society of Mechanical Engineers met June 22-25 at Buffalo for their annual convention. A number of mining men were in attendance. The report of the program was of special interest.

Predicts Increased Placer Output

A report by the Geological Survey on the Iditarod-Ruby region of Alaska just has been issued. It is by Henry M. Eakin. Mr. Eakin takes an optimistic view of the future of placer mining in this section of Alaska.

Discusses Utah Radium

A report is being prepared by the Geological Survey on the radium, uranium and vanadium deposits in Utah. The Utah field is simply a continuation of the Colorado field across the border.

To Study San Juan Basin

A detailed reconnaissance of part of the Great San Juan River coal basin is to be made this summer by C. M. Bauer and J. B. Reeside, geologists of the Geological Survey. They recently have left Washington for New Mexico to start this work.

Carbide Lamps Discussed

A circular which will go deeply into the matter of the use of carbide lamps by miners is about to be published by the Bureau of Mines. J. W. Paul is its author.

MINING STATISTICS TO COVER MORE GROUND

Success of Work Made Possible by Coopera- tion of Mine Owners and Operators

Figures Cover 95 Per Cent. of Production of United States—Few Requests Unanswered

Extensive increases in the scope of the statistical division of the Bureau of Mines are being put into effect. This applies to metal mining statistics as well as those appertaining to coal and coke. Important data as to explosives and other accessories to mining are being compiled.

The success of this division is made possible by the cooperation which is extended generously by operators and owners of mining properties. Blanks covering the detailed information required are sent to the operators of every property in the United States. Ninety per cent. of those on the list of the Bureau of Mines reply. The 10 per cent. of the requests to which answers are not received are directed mostly to mines which have suspended operations. The statistics of the Bureau of Mines are based on returns from 95 per cent. of the production.

QUESTIONS SENT OUT

The great bulk of the information is obtained from five lists of questions. They are sent out in duplicate. One list is to be filled in and returned to the Bureau of Mines and the other one is to be retained by the operator for his own file.

The list of questions concerned with accidents in metal mines asks that the number of killed and injured be shown, together with the place of the accident and the manner in which it occurs. Fifteen or more of the common causes of deaths and injury are tabulated, and the mine owner is requested to indicate how the injuries and deaths took place. Whether the accident takes place underground, in the shaft, on the surface or in an open pit is to be indicated on the card.

In addition, the number of men employed, the days worked, the principal ore produced, the number of claims, the length of time mines are idle, length of shift, number of wives left widows, number of children under 16 years of age left fatherless and other data are asked.

ADD TO QUESTIONS

The latest addition to the information requested deals with methods of mining. All methods of mining are listed. The operator

is asked to check the methods he is following.

Information as to the number killed in coal mines follows the same general lines, only it is made up by the State mine operators.

Data as to accidents in metallurgical plants, placer mines or at coke ovens are secured direct.

The statistical division is under the direction of Albert H. Fay.

TUNGSTEN PRICES SPUR PROSPECTING IN WEST

Due to the effect of the European war on the market of numerous metals, Government experts have been called upon, with more frequency than ever before, for information in regard to possible markets. There is the greatest activity on the part of those interested in tungsten. In Colorado particularly, things are booming. According to reports received here prospectors throughout the West are combing the country for this mineral. Attention is called by the Geological Survey experts to the fact that considerable speculations is certain to attend activities based on the present price of this metal.

Following the declaration of peace between the nations of Europe, it is conceded that rapid declination from the present price may be expected.

Map Nevada Coal District

A detailed map of the Manhattan coal district of Nevada is to be made by the Geological Survey. Henry G. Ferguson has been assigned to this work. He will prepare a geological report to accompany the map.

MINING CONGRESS ALWAYS READY TO HELP MEMBERS

Any member of the American Mining Congress is entitled to apply to the Washington office for any service which can be rendered. Matters will be laid before any department or will be taken up with the White House. Oftentimes more can be accomplished by personal interviews than by correspondence.

Washington has a wealth of reference facilities. These are at the service of the members of the American Mining Congress if anyone will acquaint the secretary with his desires.

The staff of the Washington office is always at your service.

LABARTHE JOINS BRADLEY AND BRUFF ENGINEERING FIRM

Jules Labarthe a mining engineer, formerly of Denver, and well known throughout the West, has just joined the firm of Bradley & Bruff, of San Francisco. The firm will be known as Bradley, Bruff and Labarthe. New offices were opened June 1 in the Hobart Building, San Francisco.

The firm will pay special attention to designing and constructional engineering; inspection, appraisals, reports, estimates, designing and construction. The equipment, operation and management relating to mining, milling, smelting power and metallurgical installations will be undertaken.

MONTANA LIGNITE IS TO BE EXAMINED THIS SUMMER

Lignite deposits in the northeastern corner of Montana are to be given attention by the Government geologists this summer. The work is being done principally for the purpose of classifying the land, so as to make it available for settlement.

This is in response to a considerable demand, as the land lying between the Great Northern R. R. and the Canadian boundary is being settled more rapidly than is any other part of the West. This work has been entrusted to A. J. Collier and W. C. Phom.

Canada Issues Reports

The Canadian Department of Mines continues to issue a number of important reports. A 400-page paper on "Corundum, Its Occurrence, Distribution, Exploitation and Uses," by Alfred Ernest Barlow, has just been issued.

Lawrence M. Lambe is the author of a report on "Eoceras Canadensis, Gen. Nov., with Remarks on Other Genera or Cretaceous Horned Dinosaurs."

The basins of the Nelson and Churchill Rivers are covered carefully in a report by William McInnes.

The geology of the Franklin Mining Camp of British Columbia is gone into extensively by Charles W. Drysdale. The report contains 246 pages and is accompanied by several maps.

"Coal Fields and Coal Resources of Canada," by D. B. Dowling, goes very extensively into the carboniferous areas of the dominion, and bids fair to be circulated very largely. It contains 200 pages and is accompanied by various maps.

"The Occurrence of Glacial Drift on the Magdalen Islands," by James Walter Goldthwait and the "Physiography of the Beavertown Map Area and the Southern Part of the Interior Plateaus of British Columbia," by Leopold Reinecke, are very interesting reports.

UNCLE SAM is conducting a multitude of activities which have a bearing on mining. Men engaged in this industry cannot afford to be out of touch with this work.

The Mining Congress Journal, the official organ of the American Mining Congress is covering the Washington field carefully in its news columns. It offers a ready means of keeping you informed as to the efforts the Government is making in your behalf.

It is important not to forget that matters develop in the capital which menace your best interest. It is advantageous to know of these things in time to counteract them.

The Mining Congress Journal covers Congress, the Bureau of Mines, the Geological Survey, the Interstate Commerce Commission, the Supreme Court, the Land Office, the Patent Office, the Department of Labor and the other Federal offices where the work affects the mine owner or operator. State mining legislation and current decisions are featured. There are many other interesting features as to mines in the Journal.

Can you afford to be without this service?

LONG RIVALRY BETWEEN MINERAL ANNUALS ENDED

"Mineral Resources" and "Mineral Industry"
Will Cooperate in Future

George Otis Smith Writes Introductory
Chapter for New York Publication

Since 1893 there has been some duplication of effort on the part of the editors of an annual work entitled, *Mineral Industry*, and the compilers of *Mineral Resources* of the United States Geological Survey.

An arrangement has just been perfected whereby this duplication will be stopped, and extensive cooperation made possible.

In former years there was intense rivalry between the Government publication and *Mineral Industry*. At one time their results lacked a great deal of coinciding. In recent years, however, there has been little variation.

At present *Mineral Industry* is edited by G. H. Roush, and is published by McGraw-Hill Book Company, of New York.

NEEDLESS WORK

For some time it has been felt that there should not be two sets of statistics on the mineral resources of the United States. This was shared by the director of the Geological Survey, who has arranged with Professor Roush to give him Government figures on American production in exchange for *Mineral Industry's* collection of data with regard to foreign mineral production.

Mineral Industry has gone into the matter of foreign production in far greater detail than the Geological Survey, while the Survey naturally tries to be the authority upon the United States output.

With the active cooperation of 90,000 producers of minerals, the Survey has been able to furnish accurate returns which hardly can be duplicated by private interests.

Mineral Industry tries to take a world view of mineral production and may be said to specialize on that phase of the subject to an extent not justified in the *Mineral Resources* of the United States.

DR. SMITH CONTRIBUTES

The introductory chapter for the 1914 volume of *Mineral Industry*, which is in press, has been furnished by George Otis Smith. Director Smith emphasizes in this paper the need of large operators having full knowledge of the resources of the United States, in this or that mineral production, and also a full comprehension of the world's resources, inasmuch as whatever foreign or home markets the American producers win, in the present emergency, only can be held as the American miner or manufacturer is able to put out a better and cheaper product.

Extracts from the chapter written by Dr. Smith are as follows:

UNPRECEDENTED SITUATION

"Never before has the census of the world's mineral industry possessed greater interest

and value. Disturbance of international trade has brought in its train changes in market relations, with the result that industrial conditions in every country have been affected. Many a manufacturer who thought little of the source of his raw material and many a mine operator who regarded his market as assured has been awakened rudely to the fact that the countries of this small world are interdependent. The enforced shutdown of Belgian smelters may have opened new markets to American spelter, but the blockade of German ports closed a large market for American copper; the embargo on British coal creates new demands for the product of American mines, but the closing of North Sea ports to commerce shuts off from American farms the needed supplies of German potash. So, in manifold ways, the currents of international commerce have been changed. It is too early to forecast the exact lines which world trade will follow finally, but we may try to ascertain the fundamental facts that will condition if not control that readjustment, insofar as the mineral industry is concerned.

LINE OF INQUIRY

"Two separate lines of inquiry must necessarily be followed by anyone who is interested in industrial America. He must have at hand an inventory of our own mineral reserves so as to determine their availability both as to location and character, and he must know the extent of foreign production and its controlling conditions and future possibilities. The present status and future prospects of American mining properly form a subject of Government investigation, and are presented in the annual report, 'Mineral Resources of the United States,' and the world view of the same subject is presented in this volume, *Mineral Industry*. These two publications have been issued annually since 1882 and 1892, respectively, but at no time has it been more important to study the subject from both points of view.

CAN BE SUPREME

"Raw material is at hand to enable this country to win and maintain supremacy as a manufacturing nation.

"Ignorance of possibilities of production in other lands means a voluntary business hazard for which there is little excuse. The opportunity for expansion of business demands a world view of the situation."

PRIZES AWARDED GOVERNMENT EXHIBITS AT SAN FRANCISCO

A preliminary list of awards by the Panama-Pacific International Exposition gives the Department of the Interior collective exhibit one grand prize. The Geological Survey receives one grand prize, four medals of honor, five gold medals, six silver medals, and two bronze medals. The Bureau of Mines receives one grand prize, six medals of honor, three gold medals and three silver medals.

SURVEY HAS WORLD'S LARGEST MINING LIBRARY

**Over 200,000 Works Preserved on its Shelves
—Every Mining Publication is Kept
on File**

It is not generally known to mining men in the United States that the library maintained by the Geological Survey here is the most complete collection of geological and mining literature in the world. It was used last year by 24,000 persons. The library contains 100,000 regular volumes and 100,000 pamphlets. All have been selected carefully. No literature which does not have a direct bearing on mining or geology is placed on the shelves.

Among the treasures preserved in the library is an original copy of an old mining book of Agricola, which was published in Germany in 1565. This book discloses a remarkable knowledge of mining and mining processes even at that time. It is illustrated with wood cuts which do much to set forth the process described.

This work was translated by Herbert Clark Hoover and his wife. The English edition was published in the same form as was the original work. It is bound in sheep-skin and contains the same wood cuts.

By far the greatest collection of works on paleobotany in the world is in the Geological Survey library. The study of fossil plants has lead to many interesting discoveries by U. S. geologists. By law, all fossils collected by the Survey must be deposited in the National Museum. Such paleobotanists as the late L. F. Ward, F. H. Knowlton and David White, are, or have been, connected with the Survey.

Every mining publication in the world is on file in the library.

Much credit for the high rating of the library is due to the years of painstaking attention bestowed upon it by Miss McCord, the librarian.

Rich Ore Shoot.

The Geological Survey characterizes the National Nevada ore shoot as "one of the most remarkable and interesting bodies of high-grade ore discovered in the West." This deposit of high-grade gold ore is situated on the western slope of the Santa Rosa Mountains in Humboldt County, near the Oregon line. The ore shoot produced \$4,000,000 in four years.

Investigates Houtzdale Fault

George H. Ashley, administrative geologist of the Geological Survey, has been doing work in the Houtzdale quadrangle in Pennsylvania. He secured further detailed information as to the continuity and identity of some of the coal beds in areas where the strata are dislocated by faults to a greater extent than has been suspected previously.

SOUTH DAKOTA INCREASES MINERAL OUTPUT IN 1914

Figures as to South Dakota's metal production just have been made public by the Geological Survey. The production in 1914 shows an increase over that of 1913. The total mineral production of the State was \$189,501,314. This came from thirty productive mines, ten of which were placers. The values are principally from gold, silver and lead.

MINERAL, POWER AND WATER RESERVES TOTAL 58,000,000 ACRES

At the end of May the total gross area of all forms of mineral, power or water reserves totaled 58,000,000 acres. Of this amount 56,000,000 acres are open to agricultural entry, with the reservation that the mineral content of this land is the property of the Government.

Boone County Report Published

Boone County, W. Va., has been studied carefully by the State Geological Survey as is evidenced by the 700 page volume which just has been issued.

The work covers historical and industrial development; physiography; structure; stratigraphy; petroleum, and natural gas; coal resources, clays, road material; building stone; sand, iron ore; forests and carbon black; paleontology and levels above mean tide. Three well executed maps are contained in a separate cover, while the book itself contains forty-two plates and three maps. It is the work of C. E. Krebs, assistant geologist; D. D. Leets, Jr., field assistant; W. Armstrong Price, paleontologist. I. C. White is the State geologist. He directed the collection of the data.

Find New Barytes Veins

Discovery of barytes veins near El Portal, Mariposa County, Cal., are regarded as of great importance here. Especially as they turn into witherite at relatively shallow depths. This is the only deposit of commercial size of this material in the United States. It is doing much to supply the domestic demand for this basis of white paint now that the supply from Germany is cut off. Important development is in progress in the barytes mines of Missouri, Alabama, Georgia, Kentucky, North Carolina, South Carolina, Virginia and West Virginia.

Nears \$4,000,000 Mark

The report covering the coal mining industry in Texas has just been published by the Geological Survey. It shows that the State in 1914 produced 2,323,773 tons of coal valued at the mines at \$3,922,459. The coal production of Texas is divided almost equally between lignite and bituminous coal.

CONSTRUCTION WORK STARTS ON GOVERNMENT'S ALASKAN RAILROAD

Operations Begun at Several Points Along Tidewater—Two Thousand Men Will Be Employed on Work—Good Weather Permits Rapid Progress

Operations have been begun upon the construction of the Government railroad in Alaska.

The preliminary base of operations is at Ship Creek, on Cook's Inlet. Thence, from tidewater, coal from the Matanuska field, in the interior, is expected to be shipped southward during the greater part of every year. The line, when completed in its entirety, will extend from Seward to Fairbanks, a distance of 471 miles, including the 71 miles of the Alaska Northern Railway, which extends from Seward, through the Kenai Peninsula, to Turnagain Arm.

A preliminary report on the work at Ship Creek was received by Secretary Lane from Lieut. Mears, one of the members of the Alaskan Engineering Commission. Lieut. Mears arrived at Ship Creek on April 26, with a force of engineers and the necessary assistants, and began immediately the landing of materials and supplies for the work of construction. Lieut Mears' report reads:

LIEUT. MEARS' REPORT

"I brought up with me a complete pile-driver outfit and an experienced crew and started them to work as soon as the equipment could be landed and set in place. We now have the dock practically completed on the right bank of Ship Creek, near the mouth. This dock is equipped with a 15-ton stiff-leg derrick operated by hoisting engine, which takes the loads out of the scows in nets or large packages and places them on the dock or flat car. I constructed what is called a 'gridiron' with pile foundation, to furnish level bases for the scows to rest upon when lying at the dock at low tide, and by this method we are enabled to unload our lighters at all stages of the tide.

"Realizing the situation at Ship Creek I made definite arrangements before I left Seattle to provide the necessary lighters and scows to handle freight from ship to shore. I knew there would be heavy demurrage, \$150 to \$200 a day, on any freighters which were held at Ship Creek longer than the accustomed time, and I also knew that a private company had provided a big barge, a floating dock, and would charge the Commission \$2 a ton for every ton of freight which passed over their barge. I, therefore, purchased a 1,000-ton barge from a towboat company in Seattle and had it delivered at Ship Creek at their risk, the price to be paid upon receipt. I loaded on this big scow three smaller scows secured from the Puget Sound Navy Yard

and also shipped up, knocked down, one 200-ton scow, built by the Seattle Dry Dock Construction Co. This gave me a floating dock, which enabled a ship to discharge its cargo, and also a fleet of lighters with which to transfer the cargo from the ship to the shore. We have had no demurrage to pay. On May 26 the steamship 'San Ramon' came into the harbor with 912,000 feet broad measure of lumber, and we discharged this cargo in three days, by working night and day.

WEATHER FAVORABLE

"We have been blessed with the most beautiful weather since my arrival here that I have ever seen. It has been bright and pleasant nearly every day, and this has been a big factor in keeping up the spirits of our working force and the stationmen waiting to secure employment.

"We have now contracted with about 400 stationmen and are employing about 100 men on force account handling the terminal work and constructing wagon roads. I expect to rapidly increase this force to 1,500 or 2,000 men as fast as material and supplies can be shipped in here to accommodate that number. By utilizing water transportation along the east side of Knik Arm we are able to attack the line at various points. We already have an active construction camp at Eagle River, a point 12 miles up the coast, and another has been started at Peters Creek, a point about 10 miles further north. We expect to continue this system of establishing camps along the tidewater, close to the line, as fast as the final location is completed and the necessary construction arrangements made.

PREPARE HOSPITAL

"I noted the wishes of the President, as expressed in the executive order, regarding the care of the sick and the injured employes, and realizing the importance of providing necessary facilities to care for our injured men as soon as possible, I purchased a partially constructed log building since I arrived here and started carpenters to work putting it in shape so that it could be utilized as a field hospital. The necessary equipment was also ordered at the same time and within two weeks I expect to have a suitable place to care for the injured men. There are now two or three injured men in camp who have suffered minor injuries from axe cuts, etc., and, doubtless, as more men are employed there will be more of these cases to care for. I have not gone into any elaborate expenditure for this hospi-

tal. It is a plain log building 26x50, which I purchased for \$350. I think it will answer all of our requirements for some time to come. This is a pretty healthy country and we have had practically no sickness, but there are bound to be some few cases of injury from time to time on work of this character.

"All of our work is being done by stationmen on a unit basis. Numerous gangs of stationmen have moved into Ship Creek seeking work on the railroad. We have had no difficulty whatsoever in securing all of the stationmen that are required. In fact, they have been coming much faster than we could place them."

INCREASED OUTPUT OF GOLD EXPECTED IN PHILIPPINES

There is every reason to think that the output of gold in the Philippine Islands will be greater in 1915 than at any other time in the history of the industry in the islands. This is the opinion of Alvin S. Cox, the chief of the Bureau of Science, of the Islands, who spent a few days in Washington recently.

With the exception of one year, the output of gold from the Philippines has increased each year since American occupation. The growth of the industry has been slow, but it has been substantial. Mr. Cox states that an excellent field for investment is offered, provided the selection of mining properties are made by capable persons.

Numerous promising prospects have been taken up and worked to some extent on deposits of copper, manganese, sulphur and asbestos, Mr. Cox states.

UNITED STATES PRODUCING MOST OF ITS OWN ASBESTOS

J. S. Diller, of the Geological Survey, has prepared a report, of more than ordinary interest, on asbestos. He points out the great possibilities that offer for the increasing use of this fabric-like mineral. For many years the raw asbestos used in the United States was obtained largely from Canada, but the United States is now producing a considerable portion of its own raw material. With the bringing in of an important field in Arizona last year, the United States is now able to furnish as high grade product as is secured in the Canadian mines.

CHINESE MINING MEN STUDYING METHODS HERE

H. Y. Liang, president of the Shue Kow Shan Government Lead Mines of Changsha, China, was a recent visitor at the Bureau of Mines. He spent considerable time in studying the method of operating the bureau, and made arrangements to keep in close touch with the work done in this country.

REPORT, JUST OUT, DISCUSSES MANY RADIUM PROBLEMS

While the abnormal condition prevailing in Europe has intertered greatly with the market for radium, great interest is continuing in the experimental work being done in the Government laboratories, and in the exploration being conducted in the field. The Bureau of Mines just has published Technical Paper No. 88, treating on the "Radium-Uranium Ratio in Carnotites." This report, which is by S. C. Lind and C. F. Whettmore, contains a great deal of valuable information. The report was written from data secured entirely before the outbreak of hostilities, and some of its conclusions do not apply to conditions as found at present.

The European buyers who secured the greater percentage of the radium produced in this country before the war, made allowances for its supposed deficiency. It has been customary to buy and sell these ores on the basis of their percentage of uraniumoxide. It is believed in some quarters that a considerable advantage has been given European buyers. The importance of determining the justification for these practices is pointed out, and the paper is written with the idea of determining within what limits the radium content is fixed by the uranium content.

271,000 ACRES OF COAL LANDS ORDERED RESTORED

During May 271,000 acres of the lands withdrawn by the Government have been ordered restored by the Board of Land Classification. These lands were withdrawn for examination as to their coal character. The greater part of the lands released are in Washington, although some are in Colorado and North Dakota.

The Geological Survey has classified and examined 135,000 acres in west central Wyoming which are held to be favorable for oil. It is recommended that these lands be withdrawn and placed in the petroleum reserves. While the geologists were making this report they examined some other lands which had been withdrawn previously and 5,000 acres were restored.

Make More Hydrochloric Acid

The demand for lump fluor spar, for the manufacture of hydrochloric acid, is improving. In 1914 the quantity manufactured in the United States increased 55 per cent. There was an increase of 91 per cent. in value. The more important use of fluor spar, however, is in the steel industry. Comparatively little gravel spar was used in 1914, which pulled down the average production. Some interesting figures with regard to this material have just been published in a report by Ernest F. Burchard, of the Geological Survey.

PROMINENT MINING MEN TO DIRECT FIELD MEET

Events Will Be One of Features of Week of American Mining Congress Convention

Representative mining men from all parts of the country have been selected to serve on the various committees to have charge of the joint field meet which will be given by the United States Bureau of Mines and the American Mine Safety Association at the Panama-Pacific Exposition September 23-24.

The field meet will be one of the features of the week during which the American Mining Congress, the American Institution of Mining Engineers, and the International Engineering Congress will hold their conventions. The committees have been selected as follows:

Executive Committee—Albert Burch, chairman, president California Metal Producers' Association, Crocker Building, San Francisco; E. H. Benjamin, 805 Linden Street, Oakland, Cal.; D. C. Botting, 329 Lyon Building, Seattle, Wash.; John R. Brownell, California Industrial Accidents Commission, 525 Market Street, San Francisco; Capt. Edwin Carpenter, United States officer in charge of guards, Panama-Pacific International Exposition, San Francisco; N. S. Kelsey, general manager Argonaut Mining Co., Jackson, Cal.; G. W. Metcalfe, 1109 Merchants National Bank Building, San Francisco; Gerald Sherman, superintendent Mining Department, Copper Queen Consolidated Mining Co., Bisbee, Ariz., and H. M. Wolflin, 407 Underwood Building, San Francisco.

Reception Committee—Fred W. Bradley, chairman, president Bunker Hill & Sullivan Mining Co., Crocker Building, San Francisco; G. W. Merrill, vice-chairman, 121 Second Street, San Francisco; J. C. Boykin, Government Exhibit Board, Exposition Grounds, San Francisco; F. G. Cottrell, Bureau of Mines, Custom House, San Francisco; Prof. E. B. Durham, University of California, Berkeley, Cal.; Prof. D. F. Folsom, Leland Stanford University, Palo Alto, Cal.; A. D. Foote, North Star Mines, Grass Valley, Cal.; Will J. French, California Industrial Accidents Commission, Underwood Building, San Francisco; F. McN. Hamilton, State Mineralogist, San Francisco; E. C. Hutchinson, president Kennedy Mining & Milling Co., 409 Montgomery Street, San Francisco; D. C. Jackling, managing director Utah Copper Co., Salt Lake City, Utah; G. S. Rice, Bureau of Mines, Pittsburgh, Pa.; T. A. Rickard, Mining & Scientific Press, 420 Market Street, San Francisco, and C. E. Van Barneveld, director Department of Mines and Metallurgy, Panama-Pacific International Exposition, San Francisco.

Committee on Awards—President C. C. Moore, Panama-Pacific International Expo-

sition, chairman; Gov. Hiram W. Johnson, of California; Senator John D. Works, California; Senator George C. Perkins, California; Mayor James Rolph, Jr., of San Francisco, and Col. Harris Weinstock, California Industrial Accidents Commission.

Committee on Events and Rules—J. W. Paul, chairman, Bureau of Mines, Pittsburgh, Pa.; A. F. Knoefel, M. D., Terre Haute Trust Building, Terre Haute, Ind.; R. U. Patterson, M. D., Union Trust Building, Washington, D. C., and H. M. Wilson, Bureau of Mines, Pittsburgh, Pa.

Committee on Judging Rescue—R. Y. Williams, chairman, University of Illinois, Urbana, Ill.; Thomas Graham, chief inspector of mines, Victoria, B. C., Canada, and D. C. Botting, 329 Lyon Building, Seattle, Wash.

Committee on Judging First-Aid—Maj. R. U. Patterson, chairman, American Red Cross, Union Trust Building, Washington, D. C.; Army and Navy Surgeons; C. C. Pierce, surgeon, Public Health Service, Exposition Grounds, San Francisco, and R. M. Woodward, surgeon, Public Health Service, Exposition Grounds, San Francisco.

Committee on Grounds—Edward Steidle, chairman, The Mine, Mines and Metallurgy Building, Panama-Pacific International Exposition, San Francisco; G. H. Deike, 541 Fourth Avenue, Pittsburgh, Pa.; W. M. Johnson, safety engineer, Panama-Pacific International Exposition, San Francisco, Cal.; T. S. O'Brien, superintendent Original Amador Consolidated Mines Co., Amador, Cal., and W. D. Ryan, Keith & Perry Building, Kansas City, Mo.

Committee on Ushering—Capt. Edwin Carpenter, chairman, United States officer in charge of guards, Panama-Pacific International Exposition, San Francisco, Cal.

Committee on Recording—John Mocine, chairman, secretary California Metal Producers' Association, 1109 Merchants National Bank Building, San Francisco, Cal.; Lewis H. Eddy, associate editor Engineering & Mining Journal, Terminal Hotel, San Francisco, Cal., and Thomas T. Read, Mining Press, 420 Market Street, San Francisco, Cal.

DR. PARKER REMEMBERED BY FRIENDS AT SURVEY

Dr. Edward W. Parker, who has been in charge of the statistical division of the Geological Survey for many years, and who takes up similar work for the anthracite coal companies July 1, was the recipient last month of various testimonials of the esteem in which he is held by his associates in the Geological Survey.

He was presented with a shield bearing the emblem of the Geological Survey, the background of which is mahogany, while the pick, hammer and triangle are of silver.

Dr. Parker also was the guest of a number of his Survey friends at several dinner parties.

RECENT LEGAL DECISIONS—LIABILITY OF CARRIERS DURING CAR SHORTAGE EXPLAINED

In Case of Pennsylvania Railroad Versus Puritan Coal Mining Company It Is Held That Operator May Take Damage Suit Direct to the Courts

Section 3 of the Interstate Commerce Act makes it unlawful for any common carrier to give any undue or unreasonable preference or advantage, or to prefer unduly one shipper to another.

Under this section there are two forms of discrimination. One is promulgating a discriminatory rule and the other is the unfair enforcement of a reasonable rule.

Where the rule of practice is attacked as unfair or discriminatory it calls for the exercise of the judgment and discretion of the administrative power which Congress has vested in the Interstate Commerce Commission; and it is for that body to say whether the rule unjustly discriminates against one class of shippers and in favor of another, and until such declaration has been made and the practice declared to be discriminatory, no court has jurisdiction of a suit against an interstate carrier or damages occasioned by its enforcement. But where a carrier's rule, fair on its face, has been unequally applied and the suit is for damages occasioned by its violation or discriminatory enforcement, then the courts may decide the mere question of fact as to whether the carrier has violated the rule and the shipper has been damaged.

Ordinarily, a coal operator, on reasonable demand, would be entitled to all the cars which he could load promptly to be transported over a carrier's line; but this is not an absolute right, and a carrier is not liable, if its failure to furnish cars was the result of sudden and great demands which it had no reason to apprehend would be made, and which it could not reasonably be expected to meet in full.

In such case in the distribution of cars to coal companies it might be necessary to determine whether account should be taken of system cars, foreign cars, private cars and the company's own coal cars.

Where a coal operator alleges he was damaged by reason of the carrier's failure to furnish him with cars to which he was entitled, and makes no claim of damages on the ground that the carrier's rule to distribute cars in case of car shortage, on the basis of mine capacity, was unfair, unreasonable, discriminatory, or preferential, and it appears that the coal operator complaining has not received the number of cars to which he was entitled according to the carrier's own rule, there is then no administrative question as to the reasonableness of the rule and no exercise of authority or jurisdiction on the part of the Interstate Commerce Commission is called for,

and the State and Federal courts have concurrent jurisdiction of such claim or suit against an interstate carrier without a preliminary finding by the Commission.

Pennsylvania Railroad Company v. Puritan Coal Mining Company. 237 U. S. 121.

ACTION BY STOCKHOLDERS

Under the Kentucky statute permitting one or more persons to sue or defend for the benefit of all, if the parties are numerous and it is impracticable to bring them all before the court, one or more stockholders of a mining corporation may, where the stockholders are numerous, and it is impracticable to bring them all before the court, maintain an action to recover in ejectment, mineral and other rights in real estate owned by the corporation, before the expiration of its charter.

Stearns Coal & Lumber Co. v. Van Winkle. 221 Federal 590.

DISSOLUTION OF CORPORATION

The statute of Kentucky provides that when a corporation expires by the terms of its articles of incorporation, it shall be the duty of the officials to settle up its affairs and business within two years, this being regarded as a reasonable time for the winding up of the corporation's affairs; and after that period of time no action can be maintained in the name of the corporation, and the title to land owned by the corporation is then in the stockholders as tenants in common, and they may sue for the recovery thereof from an adverse claimant without appointment of a receiver or trustee.

Stearns Coal & Lumber Company v. Van Winkle 221 Federal 590.

MINE LOCATION

The action of a locator in locating a mining claim, in so far as it overlaps or conflicts with an existing claim, is ineffectual for the purpose of vesting any right in the locator unless there has been an abandonment of such existing claim or a forfeiture of the claimant's right by reason of the failure to do the annual assessment work for the preceding year; and in such case the burden of establishing such forfeiture is upon the junior locator.

Musser v. Fitting (California) 148 Pacific 536.

PROOF OF ASSESSMENT WORK

The statute of California (civil code section 1,426 m) makes an affidavit, confirming to

its provisions, prima facie evidence of the performance of the annual assessment work upon a mining claim; and where in a controversy of conflicting claims the introduction in evidence of the proper affidavit is sufficient in the absence of countervailing evidence, to establish the fact of the performance of the assessment work and to entitle the locator making such proof to a decree awarding him the title to the claim.

Musser v. Fitting (California) 148 Pacific 536.

MINING CLAIM ASSESSMENT

A stockholder in a mining corporation or a member of a mining association has such an equitable and beneficial interest in mining claims owned by such corporation or association by reason of which assessment work done by him inures to the benefit of the corporation or association prevent a forfeiture.

Musser v. Fitting (California) 148 Pacific 536.

WORKMEN'S COMPENSATION ACT

The Workmen's Compensation Act of Kansas (Laws of 1911) is not unconstitutional because it gives the defenses of contributory negligence the assumption of risk to an employer who elects to come within its provisions and denies them to any employer who does not elect to come within its provisions.

Horis v. Cudahy Refining Co. (Kansas). 148 Pacific, 626.

EQUIPMENT OF CARS

The statute of Texas provides that in a suit against a person operating a railroad for an injury to an employe caused by negligence of the operator, the defense of assumed risk through knowledge of the employe of the defect is not available to the operator. This rule applies to a smelter and refining company operating a private railroad within its own yard only where it fails to equip its cars with automatic couplers and by reason of which an employe was injured; and the fact that its cars and locomotives were smaller and its tracks narrower than the standard gauge railway does not except it from the statute nor exempt it from liability for failure to so equip its cars with automatic couplers.

Consolidated Kansas City Smelter & Refining Co. v. Schulte (Texas Civil App.), 176 Southwestern, 94.

MINING PARTNERSHIP

A mining partnership exists when two or more persons own or acquire a mining claim for the purpose of working it and extracting mineral therefrom, and actually engage in working the same; but the actual working of a mine by the joint owners is essential to a mining partnership, and the partnership arises only when the co-owners unite and co-operate. The actual working of a mine by the owners together for their mutual benefit is regarded as essential to the existence of the partnership relations, the parties contributing to the expense of the work and to

share in the profits according to their respective interests.

But a mining partnership does not exist where it is agreed that one co-owner, who holds the legal title to the mining property in trust for both, should operate the property and after repaying himself certain advances, the sums remaining should be divided equally between the parties, and any sum remaining after such repayment was to be held by the person operating the mine as trustee, one-half to belong to each of the parties.

Peterson v. Beggs (Cal. App.) 148 Pacific, 541.

INJURY TO CHILD

Ordinarily only persons who come upon the premises of another on business, in some sense of the term, can hold such persons to the duty of care and caution for their safety; and under this rule a coal mining corporation, operating and handling its coal cars and motors on its private railway, between the mouth of the mine and its yards or tipple, is not ordinarily under a duty to keep a look out for children of its employes coming upon or passing over its tracks, though they reside with their parents in houses owned by the mining corporation located on its premises and near such tracks.

Dickinson v. New River & Pocahontas Coal Co. (West Virginia). 85 Southeastern, 71.

PLACER MINES IN SOUTH VISITED BY GEOLOGIST HILL

By way of completing the year's work in the study of the placers of the United States, J. M. Hill, a geologist of the Geological Survey, has left for North Carolina, South Carolina and Georgia to examine the placer deposits in those States. This work is being done in conjunction with the Bureau of Mines. Chas. Janin, of the latter bureau, accompanies Mr. Hill.

COMPLETES INVESTIGATION OF SUSPECTED CLAIMS

Investigation of the platinum claims made in the Grand Canyon, which aroused the suspicion of the Forest Service, has been completed. Henry G. Ferguson, of the Geological Survey, who was sent to the Grand Canyon at the request of the Forest Service, has returned to Washington and is engaged in making his report. The matter will be taken up at a hearing to be given in Phoenix during the summer. Mr. Ferguson expects to appear as a witness at this hearing.

The Forest Service suspects that no platinum exists on these claims.

Bids to be Opened

Bids for the constructional work on the new building for the Department of the Interior, will be open July 13.

HOLDING UP PROGRESS DECLARED POOR BUSINESS

Editor of "Power" Comments on George Otis Smith's Recent Address at University of Illinois

Editorial attention in *Power* has been given a section of a recent address by the director of the Geological Survey. It reads as follows:

Always present in every community are the "kill-joys," who see nothing but ruin ahead if this or that is done. Yet somehow, we always have lived through the administrations that were prophesied to bring the country to disaster and, strangely enough, we are getting better all the time. It seems as though progress has a certain momentum that will carry it on in spite of all obstacles, including the well-meaning people who cannot anticipate success except by time-worn methods.

In this connection a recent utterance of George Otis Smith, director of the United States Geological Survey, in an address at the University of Illinois, is to the point:

"The trouble with too many of the business men of the day, and especially with those who come to Washington to oppose new legislation, is their near-sightedness. They cannot see country-wide public opinion and do not appreciate the obvious fact that the financial centers are not also the centers of national thought. The result of this, as I expressed it in conversation last winter with a New York gentleman who was largely interested in water-power development, is that the business interests oppose something at one Congress which two years later they would accept; but the next Congress is already considering a more advanced legislative proposition. We are all more or less progressive, I told him, but the opposition has been just one lap behind.

"The bright light of publicity is coming to shine more and more upon the inner workings of all private business which has anything of the public-service character. Only about three years ago, at a conference on water-power policy, I heard the representative of the banking houses interested in the hydro-electric business tell the Secretary of the Interior, with considerable warmth of spirit, that one thing the men who make possible the development of our country by their contribution of capital would not stand for was any legal requirement of inspection of their accounts by the Government. A corporation has its rights, they contended, just the same as a private man in business. Last year in the same room, when utilization of a large power site owned by the Government was being discussed, I heard those asking for the permit dismiss the question of Federal inspection of their books with the remark, 'That need not be discussed, our books will of course be always open to any authorized representative of the Government.' The ultimatums pronounced by the ambassadors from Wall Street, State Street and West Adams Street are short-lived in the present

atmosphere of popular interest in these business questions."

To go back to our first thought that progress is going to "get there" "nevertheless and notwithstanding," the situation is much like that of a trolley car or automobile trying to cross a busy street. People and traffic will continue to hold up the car by passing in front of it like so many obstructionists until the law, personified by the traffic "cop," gives the car the sign to come ahead. Then the pedestrians have to look out for themselves and let the car pass. The car loses a little time, and so do the people, but eventually all get on and no harm is done. So it will be with the questions that Congress or State Legislatures are called upon to decide. Ultimately, they will be settled the right way, and the sooner opposition is withdrawn the sooner conditions will adjust themselves to everyone's satisfaction. Right is the good of the majority, and private interests mindful only of their profit will do well to accept the inevitable without expensive delay. It is futile to hinder progress.

AIDED MATERIALLY IN SAVING BLACK HAWK MINE FROM FIRE

**Bureau of Mines Rescue Crew Commended
Highly by E. L. Carpenter
of the Company**

Unstinted credit is given the Bureau of Mines for its part in the extinguishing of the fire in the Black Hawk Mine at Black Hawk, Utah.

According to E. L. Carpenter, of the Black Hawk Mining Co., the Bureau of Mines men did work that aided greatly in saving the property.

"At the time the fire was discovered," says Mr. Carpenter, rescue car No. 2 was close at hand and within eight hours was at the mine. It took fifty-nine days to extinguish the fire, and during this time Dr. J. C. Robert, the representative of the Bureau of Mines in this district, spent most of his time with us and gave us the benefit of his experience in such matters. This we found invaluable. Together with the efficient leadership of Messrs. G. W. Riggs and C. S. Arthur in helmet work, in a large measure aided us in saving the property.

"I cannot speak too highly of the cooperation and efficient aid rendered us by the Bureau of Mines representatives and the benefit to us of the equipments carried on the rescue car."

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EDITORIALS

FETISH OF COMPETITION HAS BEEN WORSHIPED TOO LONG

The production of copper, lead and zinc could be and, we believe, should be, so handled as to bring to the nation producing them the advantage which their highest use creates. Just at this time the price of copper and zinc is at an abnormal level, and yet this level might be maintained continuously, and its maintenance be of untold benefit to this country. The use of hydro-electric power has made copper almost an industrial necessity. That the copper of this country should have been sold to foreign nations in the past at prices slightly above the actual cost of production has depleted our own copper resources, and given foreign nations undue advantage in industrial development. Mr. John D. Ryan calls particular attention to this situation in a statement before the Federal Trade Commission in the following language:

"I long ago came to the conclusion that this country, which is the great storehouse of the natural resources of the world, practically has thrown away its substance since the beginning. It has

robbed itself of its mines, its forests, its soil. It has sold its natural resources in competition with itself, one forest track with another, one farm with another, in the severest and bitterest kind of competition anywhere in the world.

"The copper business is in comparatively few hands, that is, five or six concerns control, say, 80 per cent. of the copper. But under the existing laws those concerns are driven to such competition, the one with the other, that in the past ten years the foreign buyers paid, delivered at their ports, 14.38 cents per pound, while domestic buyers paid 15.21 cents, or eighty-three-one-hundredths of a cent per pound more, practically seven-eighths of a cent per pound in the foreigner's favor. That difference represents the cost of manufacturing raw copper into wire, or into other products, so that the German has obtained his manufactured product at the price of raw copper to the domestic manufacturer."

Mr. Ryan, chairman of the National Foreign Trade Council, expressed these views to the Federal Trade Commission as a reason why authority should be given for such trade combinations as will enable the producers of the United States to compete in foreign markets with countries where trade combinations are permitted and approved.

The JOURNAL fully approves Mr. Ryan's recommendation, but believes that recommendations should go still further and provide for such cooperation in domestic trade as would permit more perfect cooperation, and do away with the wastes which are now inherent under the present competitive system.

We believe that the Federal Trade Commission should be given ample power to permit any competition which will make for the public good, leaving to the Department of Justice the prosecution of any combination, the operations of which shall work injury to the public. The fetish of competition has been worshiped altogether too long. Big business is a necessity, and the distinguishing feature of our modern industrial life. Efficiency of production should be the basis and every combination which makes for efficiency and gives to the

consumer a proper share of the benefit should be encouraged rather than penalized. By all means let Congress authorize combinations to deal with foreign trade, but let it go still further and provide authority for such industrial combinations under strict Governmental supervision and control as will tend toward the highest productive efficiency.

GOOD STILL POSSIBLE IF CHAIRMAN WALSH RESIGNS

The JOURNAL has been asked whether its demand that Mr. Frank P. Walsh, chairman of the Commission on Industrial Relations, should resign his position was to be considered seriously. It has been urged that Mr. Walsh's conduct of the Commission's affairs has been so flagrantly partisan as to nullify entirely any possible effect of the work of the Commission.

This fact was offered as a sufficient reason for congratulation that a disturbing agency had thwarted its own power to do harm.

The JOURNAL will agree that when this commission lost its poise as an impartial medium of investigation, it became a disturbing agency, but it does not agree that an official report from what was intended to be an arbitral commission, but in fact became a bitter inquisition, will lose its evil influence because a few, or even a majority of the people, are advised of its partisanship.

Its report will still be the report of an official commission, created by Congress and appointed by the President, by and with the advice and consent of the Senate.

The people will be loathe to believe that the drawing and the enactment of the law and the appointment of the commission were engineered by selfish interests. Only those who are familiar with the peculiar methods of the labor lobby will comprehend.

In consequence, undue regard will be given by many to any report this commission may make. This, however, is not the most pernicious effect.

So much of service was needed and to be expected from this commission, that its failure to serve its purpose will

constitute its greatest harm—not the bad which actually results, but the good which fails.

The JOURNAL greatly regrets that an agency with so great power for good should cast aside its opportunity.

It may be said that Mr. Walsh having been a bitter inquisitor as one sometimes needs be in order to get all the facts, now that the facts have been developed, will become the impartial chairman. But all the facts have not been developed. For example, the real history of the Colorado labor trouble has not been brought out by the Commission. The sub-sub cellar has been keenly scrutinized for evidence that certain New York investors are responsible for the Colorado situation, but practically no effort was made to get the whole truth.

Some day, perhaps, the real story of the Colorado trouble will be made public.

The JOURNAL again urges that Mr. Walsh shall take himself out of the path through which the Commission on Industrial Relations under the guidance of a judicially-minded chairman even yet may perform an unmeasured public service.

GREATER OPPORTUNITIES OFFERED IN GOLD MINING

The present movement looking to a stimulation of our trade with South American countries finds among its leading obstacles the difficulty of extending the long-time credit to which these countries are accustomed.

It demonstrates the need of more money in order that our commerce may benefit by these immense fields of trade, to a large extent abandoned by the foreign merchants who have heretofore supplied their needs.

Given a sufficient gold supply upon which to base the extended credit, trade with the South American countries, upon a large scale, is assured to the United States.

It is stated that the note issues of the great European banks have more than doubled during the first nine months of the war, while the gold holdings have increased less than 20 per cent.

With the restoration of peace in Europe will come an enormously increased demand for capital with which to restore its industrial enterprises, while our own growing industrial demands and the need for financing foreign trade greatly will increase the demand for gold.

The JOURNAL believes that gold mining in the West offers greater inducements for investment than ever before in our history.

MINING CONGRESS STRIVES TO REDUCE MINE DANGERS

To produce the fuel which cooks your meals, and warms your house, eight human lives are sacrificed every working day of the year. Many of these lives could be saved to their families and to the nation's need of service, by your assistance.

Seven years ago, ten lives were sacrificed daily in the production of a smaller amount of coal.

The American Mining Congress began its campaign for greater safety in mining in 1906. Its first effort looked to Federal aid. The creation of a Federal Bureau of Mines was the result. In 1907 for each million tons of coal mined 6.93 fatalities resulted. In 1915, 4.81 lives were lost for each million tons of coal produced—a decrease of 34 per cent. in eight years.

Your assistance in arousing public sentiment will help further to decrease these losses. The American Mining Congress will strive to enlist every agency to protect the lives of the men who labor in the darkness under the earth.

MINING DESERVES MORE AID FROM GOVERNMENT

There is need for the men engaged in the mining industry of the country to be more familiar with affairs in Washington. The fact that this has not been the case is responsible in no small degree for the unfair proportion of Government aid that is being given mining as compared to agriculture.

These two backbone industries of the

country deserve fostering by the Government. More money could be spent profitably on Federal agricultural work. Twenty years from now it is not improbable that the agricultural appropriation will be twice its present size. This will be a result of the general realization that money spent in this way is good business for the country as a whole.

The same is true of mining. The mines of the country produce almost as much new wealth each year as do the farms. Really mining should be receiving more aid from the Government than agriculture as it is a more highly scientific business. Results are obtained only after longer and much more expensive experimentation.

At any rate it is very evident that mining is not receiving its fair proportion of the Government's appropriations for fostering development. To secure their share, miners must make their influence felt in the halls of Congress. Coordinate action of a persistent type is the only way in which the desired result can be achieved.

MINING PRESS SHOWS COOPERATIVE SPIRIT

We are grateful to the mining press for the reproduction of a number of articles taken from THE MINING CONGRESS JOURNAL. In this way additional circulation has been gained to matters of value to those interested in the mining industry. While there is not even an ethical obligation to give credit for news matter, in most cases THE MINING CONGRESS JOURNAL was mentioned as the source of the information. This indicates a friendly spirit of cooperation that we are very glad to see.

WAR EMPHASIZES MINERAL INDUSTRY'S IMPORTANCE

The importance of the mining industry to the world's affairs is being especially emphasized in the war countries of Europe. Germany's power is being measured by her control of iron—a control which if not disturbed by foreign importations undoubtedly would give her the mastery.

It is stated that Germany has control, through her own territory, Belgium and that part of France which is in her command, of thirteen twenty-seconds of the iron supply of Europe.

It is estimated that Germany is now in possession of 86 per cent. of the total iron resources of France, and 89 per cent. of its coal.

We call attention to this additional illustration of the importance of the mineral industry.

OPERATORS TO PROFIT BY INSURANCE MERGER

In all lines of endeavor improvements constantly are being installed to lower insurance rates. Great saving in insurance premiums is made, for instance, by the installation of sprinkler systems.

Considerable initial expense frequently is undertaken to save a portion of the yearly payments to the insurance companies.

The combination recently of a number of strong insurance companies to underwrite mining risks promises to be a blessing to the coal operators. It will enable them to put actual figures into the columns of their cost sheets, where before there was no certainty as to one of the important features in calculating cost.

This is the most important benefit that the insurance combination gives operators, but it means much to all those who profit by safer mining methods. Just as it is possible for the owner of a manufacturing plant to install a sprinkler system and reduce premiums, so will it be possible for the mine operator to install safety devices and reduce insurance expense. There will be a more friendly feeling toward the safety idea. Precautionary measures will not be undertaken with the feeling that it is an obligation heaped upon already hard-pressed operators, who have had such difficulty in recent years, in making both ends meet. It will be done with the knowledge that an actual profit is resulting.

COOPERATION TO BENEFIT STATISTICAL ANNUALS

Decided good doubtless will result from the arrangement made for cooperation between the editors and compilers of the two important American annuals having to do with mineral production.

The director of the Geological Survey has agreed with G. H. Roush, editor of *Mineral Industry*, to cooperate with regard to mineral statistics. The Survey will furnish the figures for production within the United States, while *Mineral Industry* will furnish foreign returns.

This cooperative spirit will benefit both volumes and the public will secure the advantage of statistics which do not conflict. The discrepancy has been slight in recent years. It is beneficial, too, in that men in the business will have one less statistical inquiry inflicted upon them.

FEW COMPLAINTS MADE BY COPPER PRODUCERS

Despite Loss of Business in Neutral Countries, Prices Continue To Rise

There is evidence at the State Department that copper producers are not at all satisfied with the loss of their market in some of the neutral countries, but the department seems to have satisfied them that nothing can be gained by clamoring for immediate action.

No attempt is made to deny that the Allies are interfering unjustly with American commerce. It is considered, however, that the situation is so abnormal that time should be given for working out a plan of procedure.

Despite the restriction of general commerce, and the loss of their principal customer, Germany, American copper interests are not faring badly. Outputs are practically normal, and the price is between 8 and 9 cents per pound higher than it was at this time last year.

While exports of raw copper are slightly under the forwardings for the corresponding period of last year, this is more than made up by the exports of manufacturers of copper.

Italy's entrance into the war may have stopped some copper going from that country into Austria and Germany, but it is believed at the State Department that little copper has found its way across the Italian frontier for many months. The necessity of Italy for increased supplies of war materials, doubtless, will increase her needs to an extent which will more than compensate for any loss of market in Austria and Germany.

England and France continue to consume copper in very large quantities for the manufacture of war materials.

It is a noticeable fact that despite the huge expenditure of ammunition and the record-breaking amount of military equipment being used, that it is very difficult to establish higher consumption figures than those in times of peace. The war has interfered decidedly with the output of many of the industries which are large consumers of copper.

Staff Is Increased

James Aston, metallurgical engineer, has been added to the staff of the Bureau of Mines. Alfred W. Gauger, jr., a chemist, also has been designated for duty. Harold M. Eastman has been appointed chemist in radio activity, and assigned to the bureau's Denver laboratory.

COLORADO LEGISLATURE PASSES STRINGENT LAW TO STOP HIGHGRADING

Ore Buyers Required to Furnish \$5,000 Bond—Various Safety Devices Made Compulsory—Act Providing for Stricter Assessment of Mining Properties for Purposes of Taxation is Added to Statutes

Colorado

(These bills were passed at the last session of the Colorado Legislature.)

Senate Bill 258, by Senator Elliot. This act provides for the regulation of the business of milling, sampling, concentrating, reducing, purchasing and reserving for sale ores, concentrates and amalgams bearing gold or silver, gold dust, gold and silver bullion, nuggets and specimens.

The act makes it unlawful for anyone, without first procuring the license herein provided for, to engage in the business of milling, sampling, concentrating, reducing, purchasing or receiving for sale ores, concentrates or amalgams. Anyone engaged in such business shall pay a license tax of \$100 per annum for each place of business within the State. No license shall be granted unless the members of the firm shall be bona fide residents of Colorado. No license will be granted to any joint stock company or corporation organized under the laws of any other State or foreign country unless such company has complied with all the laws of Colorado relating to foreign corporations doing business within the State.

The act provides that full publicity be given to the application for license before it is granted.

BOND REQUIRED

Each application must be accompanied by a bond to the people of Colorado for \$5,000 with two or more sufficient securities and conditioned that the obligor will not violate any law relating to such business.

All ore buyers shall keep and preserve a book in which shall be entered at the time of delivery, all ores received, as well as the person making the delivery with the net weight and amount, and a short description of each lot, together with the location of the mine from which the ores are said to come.

The Secretary of State is empowered to give permission to anyone making an affidavit as to the loss of ores by theft, to examine the records of the ore buyers. Heavy penalties are provided for violation of any provision of this act.

PROVIDES SAFETY DEVICES

House Bill No. 220, by Messrs. White and Roberts. This bill regulates the construction, equipment and operation of metalliferous mines, mills and metallurgical plants. All shafts according to the provisions of this

bill, must have collars which will prevent persons from falling into them. All shafts equipped with cages must be supplied with safety clutches and safety chains. The chains must be constructed so that in the event of the cage being raised to the sheave wheel the cage will be held and prevented from falling into the shaft. In shafts equipped with buckets, shaft doors must be constructed that will prevent any material falling into the shaft from dumping. Cages must be equipped with gates which must be used when passengers are handled.

FIXES LIMIT FOR LIENS

House Bill 155, by Mr. Sabin. This act provides for the revision of certain existing laws and amends them to read as follows: The act applies to all persons who shall do work or furnish materials for mining or milling. No lien claimed by virtue of this act shall hold the property longer than six months after the last work or labor is performed, or materials furnished, or after the completion of buildings or other improvements, unless an action shall be commenced within that time to enforce it and a notice of *lis pendens* shall be filed for record within that time in the office of the clerk and recorder of the county in which the land is situated. It is provided that where mines are worked through a common shaft, tunnel, incline, adit, drift or other excavation, it shall be deemed one mine.

ASSESSMENT

House Bill No. 195, by Messrs. Taylor, Tonge, Mayer, Roberts, O'Rourke, Doyle, Sabin, Green, Crist, McNair, McDewitt, White and Du Praw. This act provides for the assessment for the purpose of taxation of mines and mining claims bearing gold, silver, lead, copper, or other precious or valuable minerals and possessory rights therein classified under the laws of Colorado as producing mines. Operators of mines are required to make out and return to proper officials between January 1 and 15 of each year, a report giving the name of the mine or mining claim; the name of the owner; the number of acres contained; the number of tons of ore extracted during the present year; the gross value of the ore extracted; actual cost of extraction, which shall include the cost of labor and workman's compensation insurance, but shall not include the salaries of any officials and agents not actively and consecu-

tively engaged in or about the mine; actual cost of transportation to place of reduction or sale; actual cost of treatment, reduction or sale; the net proceeds after deducting the above expense. The statement is to be signed and sworn to by the managing agent of the property.

ONE-FOURTH VALUATION IS BASIS

The assessor, on receiving the statement is to determine the proceeds of any such producing mine for the preceding year, and shall value the property at a sum equal to one-fourth of the gross proceeds of the preceding year. Provided that any number of contiguous claims owned and operated as one property by the same person or association, the gross production of which is more more than \$5,000 a year, shall be deemed as one producing mine.

In case the mining claim shall not be patented or entered for patent, but shall be assessible and taxable under this act, possession shall be the subject of this assessment. If the mining property be sold for taxes the sale for such tax shall pass the title and right of possession to the purchaser.

Arizona

This bill was passed recently by the Arizona Legislature.

Sub. H. B. 6, Sec. 1. That paragraph 3654, title 29, chapter 2, Revised Statutes of Arizona, 1913, Civil Code, be and the same is hereby amended to read as follows

"3654. All miners, laborers and others who may labor, and all persons who may furnish material or merchandise of any kind, designed or used, in or upon any mine, or mining claim, and to whom any sum is due for such labor or material, or merchandise shall have a lien upon the same for such sums as are unpaid. And said lien for labor performed, or material or merchandise furnished, shall attach to said mine, or mining claim, whenever said labor was performed, or said material or merchandise was furnished in or upon said mine or mining claim, under any of the following conditions:

"(1) Under or by virtue of a contract between the person performing such labor, or furnishing said material, or merchandise, and the owner of said mining claim or his agent, trustee, receiver, contractor or contractors.

"(2) Under or by virtue of a contract between the person performing such labor, or furnishing said material or merchandise, and the lessee of said mine or mining claims, or his agent, or contractor, where the terms of the lease from the owner of said mine or mining claim, to said lessee, permit said lessee to develop or work said mine or mining claim.

"(3) Under or by virtue of a contract between persons performing said labor, or furnishing said material or merchandise, and any person or corporation having an option to buy, or contract to purchase said mine

or mining claim, from the owner thereof, where said option or contract permits the person or corporation, having said option to buy, or contract to purchase, to go upon said mine or mining claim, and to work or develop the same.

"The lien herein provided for shall attach to the mine or mining claim in, or on which, said labor was performed, or material or merchandise furnished, in preference to any prior lien or encumbrance, or mortgage upon said mine or mining claim, except such liens, encumbrances, or mortgages which may have attached to any mine or mining claim, prior to December 5, 1912.

"Provided, that the provisions of this paragraph shall not apply to any mine or mining claim worked under lease, bond, or option, by any person, partnership, association, company or corporation, under lease from the owner thereof, when the owner of such mine or mining claim shall have posted at the collar of all working shafts, tunnels or entrances to the mine, entrances to all boarding houses, and shall have mailed by registered mail to the Secretary of any labor union at such camp, if any exist, the notice provided for in section 2 of this act, on or before the day the lessee or those working said claim under bond lease or option to buy begin operations and shall file for record in the office of the County Recorder of the county within which such mine or mining claim is situated, within thirty days from the date of such lease, bond or option of said claim, a notice to the effect that said mine or mining claim will not be subject to the lien provided for in this act, and the owner or owners of said mine or mining claim, will not be responsible for any debts of said person, partnership, association, company, or corporation operating or working said mine or mining claim under lease bond or option; and provided further, the lessee of said mine shall keep said notices posted upon said claim or claims, and upon his failure to do so shall be deemed guilty of a misdemeanor.

"It is hereby made the duty of the County Recorder to record all such notices upon the payment of a recording fee of one dollar (\$1.00).

"Sec. 2. The notice provided for in section 1 shall be substantially as follows:

"Notice is hereby given to all persons, that the undersigned — is the owner of — mine or mining claim, hereinafter described, with all the improvements thereon.

"That said mine or mining claim is now in the possession of and is being worked and operated by —, pursuant to a contract (or option to purchase or lease) made and executed by the undersigned in favor of said — dated —; said contract to be in force up to and including the — days of —, 19—.

The undersigned is not working or operating said mine or mining claim, or any part thereof, and does not intend to work or oper-

ate said mine or mining claim, or any part thereof, or purchase any supplies or materials therefor, during the life of said contract with said —.

"The name of said mine or mining claim is —, situate, lying and being in — mining district in — County, in the State of Arizona. The location notice of said mine or mining claim being duly recorded in book — at page — of notices of locations of mining claims, in the office of the County Recorder of said — County, State of Arizona, to which book and page reference is hereby made for a more particular description of said mine or mining claim.

"In witness whereof, the said — has up to and including the — day of —, 19—.

"Witness:

"Sec. 3 All acts or parts of acts in conflict with the provisions of this act are hereby repealed."

Comment on this law by a member of the Arizona Chapter of the American Mining Congress is as follows:

"This bill passed both branches of the legislature with a substantial majority, and was passed to the office of the Secretary of State without the Governor's signature, the reason for the failure of the Governor to sign the same remains unannounced.

"The bill became a law June 11. It will not be referred to the people, as it is so apparent that without such a law there will be no development of mining properties in Arizona.

"Another law was initiated and voted on at the last election termed the anti-black list law. This measure became a law by a vote of 18,207 for the measure with 17,444 against; a similar law to this was passed in Kansas and has been held unconstitutional by the United States Supreme Court; this law is now before the courts.

"The anti-alien law, which provides that 80 per cent. of all persons employed should be native born or naturalized voters was also initiated at this election and passed by a vote of 25,017 for the measure, with 14,323 against. Since it was necessary to understand English to become naturalized, this law was confiscatory and has been held unconstitutional by the Supreme Court and which decision doubtless will be upheld by the Supreme Court of the United States, as the law is in conflict with treaty rights of other nations.

"Will the people of Arizona continue to be progressive and throw off the yoke of radicalism? If so, the State will enter upon an era of prosperity and she will be one of the grandest States of the Union, but to do so the people who are paying the taxes, such as the farmer, merchant, cattlemen, sheepman, miner, and ones who pay the bills, must get together, throw off their differences, get behind the mining industry and work for one object—'Better and saner laws for the new State.'"

PROSPECTING FOR MOLYBDENUM STIMULATED THROUGHOUT WEST

Price of Metal Has Increased Remarkably— Being Used Extensively in Cannon, It Is Declared

The sensational rise in the price of molybdenum from 20 to 30 cents to as high as \$1.75 a pound, has increased greatly the interest in this metal throughout the West. Molybdenum is used almost entirely for the purpose of toughening steel. As only a small percentage is needed, the market is limited.

A popular belief that molybdenum is used in powder is not based on fact. None of it is used directly in the manufacture of explosives.

It is declared that Germany is using molybdenum extensively in cannon.

FOUND IN ALL GRANITES

Molybdenum is found in all granites. Usually the percentage is too small for recovery, but in several districts in the West granite has been found containing a considerable percentage of the metal. The best-known source of the metal is a mine west of Georgetown, Colo. Important amounts of the metal are being secured from a mine at Lake Chellan, Wash. The mines at this point are on a cliff 900 feet above the valley, and in one of the most picturesque spots to be found in the world. Some molybdenum is found in Arizona and in the Hermit Mountains, of New Mexico.

An increasing amount of molybdenum is being consumed by the manufacturers of incandescent lamps. A small amount of molybdenum wire is used in each lamp. The aggregate of this consumption, however, is several tons per year.

USED IN TOOL, STEEL

Combinations of molybdenum, cobalt, chromium and tungsten are being used in tooth steel.

While the uses of molybdenum are increasing steadily, prospectors are cautioned by Government experts that the demand can easily be over supplied. At present prices, large profits are being made by those mining the metal under anything like economical conditions, but it is pointed out that a small increase in the present production would result in prices which would make the mining of the metal unprofitable under most conditions.

GEOLOGISTS CONTINUE WORK IN MIAMI LEAD-ZINC DISTRICT

Field work in the lead and zinc districts of Oklahoma and Kansas is continuing under the direction of C. E. Siebenthal, geologist of the Geological Survey. At present he is working in the Miami District. Mr. Siebenthal is an expert in lead and zinc and his work is attracting considerable attention. He is engaged also in making a report on zinc deposits in Missouri.

RICE EXPECTS EXPLOSION REPORT TO BE A CLASSIC

Chief Mining Engineer Discusses Work at
Pittsburgh and in Joplin
District

Information that will be highly valuable in the prevention of explosions in mines is expected in the report which will be made soon of the experiments conducted at Pittsburgh by the Bureau of Mines. George F. Rice, chief mining engineer of the Bureau of Mines, was in Washington recently to make his report for the fiscal year.

"We hope that this report on explosions will be of much value to the miners of the country," said Mr. Rice. "The experimental mine has been shut down until we work up the data we have secured from 200 explosions. The experiments have been in progress two years.

TO BE READY IN FALL

"This information is being whipped into shape at the present time and will be ready for the printers in the early fall. Before the end of the year it should be in the hands of the miners of the country. It is difficult to give an idea of the value of the experiments. It will be necessary to see the entire report before a conception can be formed of its importance."

Mr. Rice also told of the important work that it being done in the zinc mining region of Missouri. Edward Higgin, mining engineer Bureau of Mines, and Dr. D. A. Lanza, of the Public Health Service, have been conducting some very valuable investigations into the health of miners in the Joplin region and in the sheet ground around Webb City. The danger to the miners from the dust in these mines has been demonstrated fully, according to Mr. Rice.

COMMENDS OPERATORS

Mr. Rice commends the operators of these mines very highly for the careful cooperation that they have given in the work of the Bureau of Mines and the Public Health Service. Every effort is being made to keep the dust out of the air. The Bureau of Mines has devised a breathing apparatus which is proving very efficient. Water is being piped directly to the faces. Water injecting drills are being used.

Mr. Rice states that the miners themselves are contributing very actively to the betterment of conditions in the zinc mines. At first they were rather scornful of the precautions being taken to prevent injury to their lungs from the flinty dust. Now, however, they fully realize the benefits to be

obtained from these methods and are co-operating heartily with the Bureau of Mines men and the surgeons representing the Public Health Service.

CONDUCT OF CHAIRMAN WALSH IS LAMENTED

Coal Mining Review Questions Results of
Industrial Relations Committee's
Work.

In discussing the Commission on Industrial Relations, *The Coal Mining Review*, published at Columbus, Ohio, makes the following comment:

"The United States Congress created a commission to investigate the industrial conditions of the country and the cause of industrial unrest, strife, strikes and conflicts which cause the suspension of the operation of industry, idleness of wage earners and the destruction of life and property. Congress acted wisely in the creation of such an important commission.

"The Commission on Industrial Relations might have been one of the most important and potent factors of the country to eliminate industrial unrest and promote and establish industrial peace. The commission might have quietly, sincerely and earnestly pursued its investigations in such a dignified manner, as would command the respect and confidence of the American people. Every avenue of information was open to the commission and there was every reason to believe the commission would make its investigations complete.

"There was a great field for intelligent investigations. An excellent opportunity was presented to do a splendid work for the country and for humanity. Congress and the American people had a right to expect splendid results from the investigation and final conclusions of the work of the commission. Will the final judgment of the commission be impaired by the conduct of any of the members of the commission?

"The desire of some members of the commission, notably the chairman, to break into public print and prejudice many phases of our industrial life, before the work of the commission is concluded, may be harmful in its effect. It will be a matter of keen regret if the final judgment of the Commission on Industrial Relations is impaired by any member of the commission insisting on giving expression to his personal views of certain incidents of our industrial life, before the commission reports its findings to Congress."

Virginia Produces Less Coal

There was a slight decrease in the production of coal in Virginia in 1914. The output was 7,959,535 tons. The value was \$8,032,448. These figures show a slight decline from those of the preceding year. This was due principally to the smaller demand for coke, it is stated.

GUIDE BOOKS CERTAIN TO BENEFIT THE WEST

Will Describe Its Resources in Readable and Easily Understood Language

F. L. Ransome Tells What Work, Soon To Be Published, Will Contain

That the West will profit immensely by the publication of guide books to its resources by the Geological Survey, there is not the slightest doubt expressed here. The books are to be in popular language and have been made highly interesting by the introduction of features new to technical reports. Director Smith has been giving much of his personal attention to this work. A portion of the work has been done under the direction of F. L. Ransome, who is in charge of Western areal geology. He comments interestingly on the forthcoming work:

"There has been a feeling in the Geological Survey for a long time," says Mr. Ransome, "that a greater effort ought to be made to attract the attention of the public to what the Survey is doing. Scientists have known all about us from the beginning, but with the general public we have had no touch.

"The plan to popularize as large a part of our work as possible, and give it a true educational value, having been adopted, it was not difficult to make a beginning. We decided to pick out four Western railroad routes, and issue books telling about those things in connection with them most likely to interest the average traveler. These four routes were not picked out because they are the most celebrated in their line. There was no thought of this kind in making the selection. We had to begin somewhere and so we selected these four lines, expecting ultimately to get around to all the others.

WHAT BOOKS WILL CONTAIN

"The books will contain between 300 and 400 pages each, and will be on sale in the office of the superintendent of documents at a nominal price. We expect, however, that the railroads interested will republish the books in large numbers for the use of their patrons. The books will be well illustrated.

"Each book will contain maps showing the railroad in question and the country for 10 miles on each side of it. There will be a running description of topographic and geologic features of interest, and a brief history of whatever there may be along the line in the way of industrial development. Some attention will be given to the botany of the route, and the characteristic flowers and plants will be referred to in an interesting way.

"The effort in each case will be to be interesting without being technical. We shall avoid dry detail, and give no more geology than the ordinary traveler will care for. If

it should seem necessary to introduce a small amount of technical data they will be given in foot-notes at the bottom of the several pages."

The four routes which are to be treated in the way referred to are the following:

The Northern Pacific Ry., from St. Paul to Seattle.

The Union Pacific Ry., from Omaha to San Francisco, with a description of the side trip from it into Yellowstone Park.

The Santa Fe Ry., from Kansas City to Los Angeles.

The coast routes, from Los Angeles to San Francisco, and from San Francisco to Seattle.

HOW DATA WERE GATHERED

"We had an interesting time gathering the data for the books," said Mr. Ransome. "First, we collected everything in the Survey bearing upon the question, and then we sent men into the field. One set of men made a motor car trip along the line of the Northern Pacific road, going over the route carefully, mile by mile, and making frequent stops. Another set of men traveled the length of the Union Pacific by hand car, also stopping frequently in order to get the information that was needed for the book. A third set went over the line of the Santa Fe, by hand car and by team.

"The railroads rendered us important service, and without their aid we could not have finished the field work as rapidly as we did. The facilities of these Western roads are rather large in these directions. The Santa Fe road, for instance, maintains a geological corps."

The forthcoming books will be the first of the kind ever published by the Government; if they are as successful as the authorities anticipate, they will not be the last. The Geological Survey has great funds of information which the public would read with much interest if it could be made available in untechnical form. The success of the railroad guides will mean efforts to put much of this information into popular language for general distribution.

MEETS CRITICISM

Congress would be very glad to have more work of this kind done not only by the Geological Survey but by the other scientific bureaus of the Government. It has been a matter of criticism for many years that the Government was piling up valuable information to which the public was entitled, but access to which they could not have because of the technical terminology employed by the scientific writers. In the Department of Agriculture this criticism has been largely met during the past few years by a regularly organized publicity bureau, which prepares popular bulletins on the work of the department and sends them to the newspapers and to individuals, as requested. The Geological

Survey, it is believed, could be equally useful to the general public, and much interest is being taken in the forthcoming guide books as its first real venture in the direction of popularizing its work.

IMPORTANT WORK ON OIL SHALES PLANNED THIS YEAR

Distillations to be Made in Wyoming Fields Where Especially Rich Deposits are Reported

Efforts to Distill Petroleum Profitably May Be Made Soon by Private Company

Correspondence reaching the American Mining Congress, the Geological Survey and the Bureau of Mines indicates that the article on the oil shale resources of the West in the June number of THE MINING CONGRESS JOURNAL excited great interest. In this connection it may be said that the work was begun two years ago by M. R. Campbell who has charge of the section of Western fuels at the Geological Survey. More recently the Bureau of Mines has been able to extend valuable cooperation in this work.

TO MAKE FIELD TESTS

Much of the field work which has been done in the oil shale regions of the West has been under the direction of D. E. Winchester. Mr. Winchester left Washington recently for Wyoming where he will make an examination of the outcrops along Green River. It has been reported to the Survey that the shales at this point are equal, if not richer than any others that have been found in the West. Samples will be taken to verify this conclusion. Mr. Winchester will make actual distillation tests. He carries a full outfit, which will be set up in the fields he will visit. He will spend four months in these examinations.

COST TOO GREAT

Judging from the tone of some of the letters received, the impression has been gained that oil shales can be handled commercially at this time. It is pointed out at the Survey that this is an erroneous conclusion. There is still a wide margin between the cost of producing a barrel of petroleum from shales and from natural wells. With petroleum at its present price it hardly is expected that the distillation process can be made cheap enough to compete with petroleum obtained from wells.

There are several reasons why oil shales can be handled with profit in Scotland, where they have been exploited for more than 100 years. Labor is cheap and plentiful there. The deposits are near the sea coast. There are no deposits of liquid petroleum in the British Isles. Much of the profit of the Scottish product is obtained from by-products. It is an important source of nitrogen.

GREAT ASSET

There is no tendency on the part of Government experts, however, to depreciate in any way the latent value of this great natural resource, which has been bestowed so generously on many Western States. The invention of a cheap process of distillation is considered well within the range of possibility. Increasing demands for a supply of nitrogen may hasten the development of oil shales.

In Scotland these shales occur in narrow veins and are mined as is coal in this country. In the United States there are places in several of the Western States where the shale formation exceeds 3,000 feet in thickness. If the 4-foot veins in Scotland can be mined with a profit, it is considered by some that operations could be undertaken profitably on the enormous deposits of this country. The percentage of petroleum content in this country also is very much greater than is the case in Scotland.

POSSIBILITIES ARE MANY

As none of the commercial companies has undertaken extensive experiments with oil shales it is possible that at least one large oil company will undertake this work soon. Some of the States having large deposits of oil shales also may undertake experiments. With all this work in progress Government experts will not be surprised if much cheaper methods of distillation are perfected.

LUPTON CONTINUES WORK IN THE BIG HORN BASIN

Chas. B. Lupton, a geologist of the Geological Survey has just taken the field in the Big Horn Basin to continue the work begun last year in this important oil field. His work will be done on the eastern side of the basin. This field continues to attract more attention than does any other oil field in the Rocky Mountains. This is due to the exceptionally high grade oil which is being found there. Mr. Lupton will have with him MacW. Ball and Robert Wood, geologists.

ALASKAN WORK STARTS EARLY AT SEVERAL POINTS

Considerable geological and topographical work already is under way in Alaska, according to Alfred H. Brooks, of the Alaskan Mineral Resources Division of the Geological Survey.

V. C. Witherspoon is in charge of the Juneau party which has been working for several weeks in that portion of Alaska. B. L. Johnson and his party are at Valdez, where they began work June 7. The parties under the direction of S. R. Capps and James W. Bagley began work on the same date in the Knik Arm District. G. H. Canfield is investigating water power sources in southeastern Alaska. The work began May 1.

MINING CONGRESS CONVENTION TO BE WELL ATTENDED

Judging from the numbers of mining men throughout the country who have announced their intention to attend the Mining Congress Convention in San Francisco, September 20 to 22, this year's assemblage will be the largest in the history of the organization.

Mining men are arranging their trips to the fair so as to be there at the time of the convention.

One of the advantages offered to those attending the American Mining Congress Convention this year will be the opportunity to attend the conventions of the International Engineering Congress, the American Society of Civil Engineers, the American Society of Mechanical Engineers and the American Institute of Electrical Engineers.

Never before have the conventions of so many technical societies been held, one following the other, at the same place.

It is desirable and will be profitable to the mining men intending to attend the Mining Congress convention to communicate with James F. Callbreath, Munsey Building, Washington.

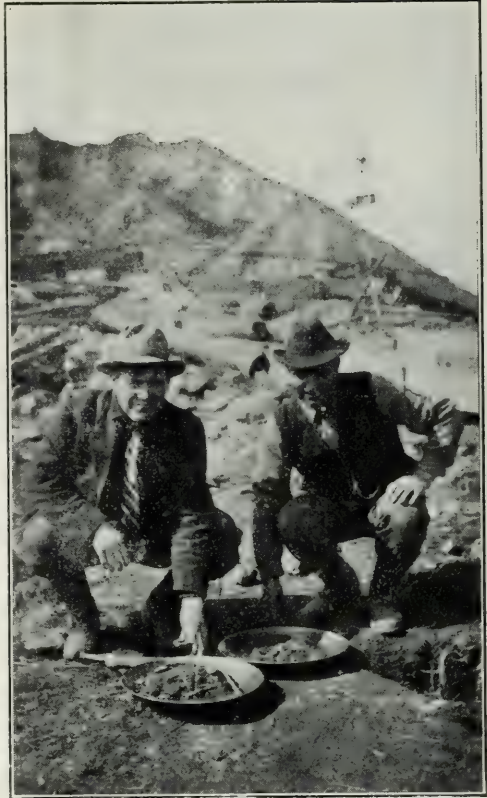
RHODE ISLAND COAL FORMS IMPORTANT RESERVE

A detailed report on Rhode Island coal has just been completed by George H. Ashley, administrative geologist of the Geological Survey. Several months necessarily must elapse before the work can be put through the printing office. Mr. Ashley goes into the history of the attempts to work Rhode Island coal, and points out the reasons why it cannot be handled at a profit under present conditions. He shows, however, that the margin existing between present prices and the price at which this coal can be mined is not great. Rhode Island coal forms an important reserve and doubtless will be used over a considerable range of territory when competition becomes easier.

APPLY FOR CONTRACT TO TRY OUT RITTMAN PROCESS

H. G. James, secretary and general manager of the Western Petroleum Refining Association, and C. E. Braley, of the same association, held a conference last month with the Secretary of the Interior, and the acting director of the Bureau of Mines, with regard to the experimental use of the Rittman process for the refining of gasoline.

Some details of the arrangement remain to be perfected, but it is believed that the Rittman process will be given a good try-out upon a commercial basis.



A CLEAN UP AT ESTER CREEK, ALASKA
The pans contain \$15,000 in gold dust

LEASE OF OSAGE OIL LANDS IS PERFECTED

Secretary Lane recently made public the result of the negotiations that he has been carrying on with the Osage Tribal Council respecting the leasing of the oil lands belonging to the Osage Indians in Oklahoma. Commissioner Sells, Superintendent Wright, and Mr. Williams, the oil expert of the Bureau of Mines, have been in constant session with the Indians, to whom all of the proposals for the leasing of these lands were presented. The Indians called in a body on Secretary Lane and presented him with a resolution, which was approved by the Secretary. The resolution was adopted unanimously by the Tribal Council.

NEW MEXICO BREAKS ITS RECORDS OF COAL PRODUCTION

New Mexico broke all previous records in its coal production in 1914. According to figures just made public by the Geological Survey, New Mexico is the only one of the Rocky Mountain States in which more coal was mined in 1914 than in 1913.

Traffic Developments of the Month

MONON COMPANY LOSES

Commission Refuses to Grant Request for Removal of Differential

The rate of 87 cents on coal to Chicago from mines in the Sullivan-Linton group of Indiana, has been found by the Commission not to be unduly discriminatory, as compared with the rate of 77 cents allowable to the same destination from mines in the Brazil-Clinton district of the same State. This decision was handed down last month in the case of the Monon Coal Company, et al, and the Chicago and Eastern Illinois Railroad, et al.

The Sullivan-Linton field is only a few miles to the south of the Brazil-Clinton field, yet a differential of 10 cents is maintained. Mining conditions are the same. The seam of coal is the same. The coal is sold in the same market. The area covered by the two fields is smaller than almost any other area where competitive freight rates are recognized in other districts.

The reasonableness of an 87-cent rate was not covered. The only issue was the discrimination between the two groups. The object of the complainants was stated to be to market their coal in the Chicago market, which is the natural market, on an even basis with their next-door neighbors, situated in the 77-cent field.

The Commission, however, took a different view of the matter. Commissioner Harlan, who made the report of the Commission said in part:

"The differential complained of has been in effect since 1896, when it was reduced from 13 cents. The complainants entered the field with knowledge of the differential, and by their own testimony were able to compete so long as the coal from the distant group was of a superior quality. Transportation conditions have not changed, but the mines have been developed," and the operators in the Sullivan-Linton group now find that their markets are being restricted. This same condition exists also in certain coal fields in the State of Illinois, as we found in the Illinois coal cases, supra. In *Baltimore Chamber of Commerce v. B. & O. R. R. Co.*, 22 I. C. C., 596, 603, we said that we have not the power 'to require railroads, in the face of varying trade conditions, to adjust their rate schedules in such manner as to insure to a market the continuance of a trade it has once enjoyed. The requirements of the law are that transportation rates must be reasonable and must not be unjustly discriminatory or give undue preference.'

"And again in 'In re Advances in Rates for

Transportation of Coal,' 22 I. C. C., 625, we said:

'It is not the duty of a carrier to place all of its shippers in a position to meet the markets which they may desire to supply. The rate made by a carrier must be just and reasonable for the service which it gives and should have relation to the cost of that service and the character of the commodity transported.'

"We have said that the reasonableness of the 87-cent rate is not in issue, but that the case is one of alleged discrimination only. This allegation is not sustained of record. The situation in which the operators of the Sullivan-Linton group now find themselves is due not to a rate schedule that is unreasonable or unjustly discriminatory, but largely to a trade condition which has developed in a neighboring field, namely, the opening of new mines in the Brazil-Clinton field, particularly in the No. 4 vein."

AUTHORIZES NEW RATE

Commission Allows M. K. & T. to Equalize Charges via Galena

In the matter of ore shipments from Joplin, Mo., the Commission has ordered that the M. K. & T. R. R. and its connections be authorized to establish certain rates on ores from Joplin, Mo., to St. Louis, and points taking the same rates, via their longer route through Galena, Kans., the same as the rates concurrently in effect on like traffic from there to the same points, via the shorter lines of the Missouri Pacific Ry. Co., or the St. Louis & San Francisco R. R., and to maintain higher rates at intermediate points, provided that the present rates at the same intermediate points are not exceeded, and shall not exceed the lowest combination of rates in more distant points. This order covers lead and zinc ore, pig lead, bar lead, sub lead, white lead, zinc, spelter and litharge, red lead and chrome yellow. A minimum weight of 50,000 pounds is fixed for the lead and zinc ore, except when the marked capacity of the car is less than the marked capacity will govern; but under no case is the minimum weight to be less than 40,000 pounds.

Smelter Wins Case

Reparation has been awarded against the initial carrier in the case of the Great Western Smelting & Refining Co. against the Baltimore & Ohio Southwestern R. R. The claim had its origin in damages due to misrouting and the failure of the carrier's agent to advise complainant that the released value of the shipment was not stated in the bill of

loading, where statement of released value would have rendered applicable a lower rate.

Get \$6,000 Reparation

Reparation in the amount of \$6,034.48, together with interest from June 1, 1913, has been awarded in the case of the Schrager Coal Co. v. The Delaware, Lackawanna & Western and Central of New Jersey Railroads. The reparation was awarded on the establishment that unreasonable charges had been collected by the carriers of coal from Schrager Washery, near Taylor, Pa., to tide-water points in New Jersey.

Restore Old Rates

After a determined effort to increase the rates on ore and smelter products from Salt Lake City and other points in Utah, Nebraska and California to eastern destinations, they have returned voluntarily to their former tariff. As a result, the commission has set aside its suspension order covering the tariffs providing for the increases.

Texas Sulphur Becoming Factor

Evidence that Texas sulphur is coming into competition with the Louisiana product, which has dominated the market for a number of years, is shown by an order of the Interstate Commerce Commission allowing Freeport and Bryanmount, Tex., rates to points in Alabama, Tennessee and Georgia, which insure non-discriminatory rates as compared with those from Sulphur, La.

Pig Iron Rates Suspended.

Proposed increased rates on pig iron in carloads from Virginia furnaces to various parts in trunk line and New England territories have been suspended until December 29. A former order of the commission suspended these rates from March 1 until June 29.

Smelter Company Wins Case

Reparation has been awarded to the American Smelting and Refining Company in its case against the Chicago, Rock Island and Pacific Railroad. The Smelting company's charge of unreasonable rates collected on copper sulphate from Omaha to Silvia Shops, Ill., is maintained.

Allowances Suspended

Proposed allowances on anthracite coal at Hauto and Nesquehoning, Pa., have been suspended by the Commission until October 15.

Coal Operators' Case Dismissed.

The case of the Coal Operators' Traffic Bureau, of St. Louis, against the Baltimore & Ohio Southwestern R. R. has been dismissed at the request of the complainant, and upon consideration of the record by the Commission.

Coal Company Sustained

The Hosteler Coal and Coke Company was sustained in its contention against the Chicago, Rhode Island and Pacific, in which unreasonable charges were claimed on anthracite coal from Milwaukee and Pocahontas Island.

Petroleum Rate Suspended

Proposed increases in the rate on petroleum in carloads from Kansas points to Joliet, Ill., have been suspended until September 29. The present rate on this business is 22 cents, the proposed rate is 27 cents.

Hearings Assigned

Hearings have been assigned by the Commission as follows: West Consolidated Coal Co. v. the Chicago, Terre Haute & Southwestern R. R.; Chicago, July 19, Examiner McKenna.

POTASH DISCOVERED IN DEEP WELLS IN TEXAS

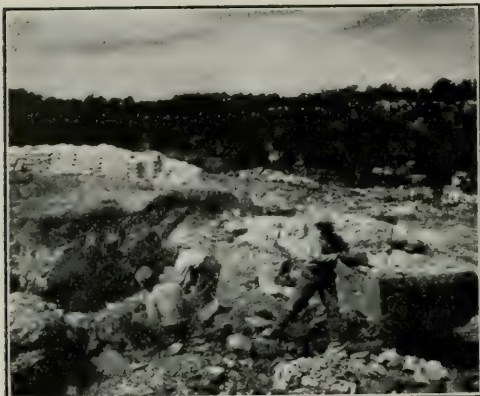
Potash has been discovered in a number of deep wells in the Pan-handle region of Texas. In the vicinity of Amarillo, Tex., and Tucumcari, N. Mex., especially good results have been obtained, according to observations made by Dr. William B. Phillips, of the University of Texas.

The presence of potash in this region also has been proven by an examination of drill cores made during exploration for oil.

The University of Texas has given valuable assistance in stimulating and inviting prospecting for this much-desired mineral.

LEHIGH COAL AND NAVIGATION COMPANY HOST TO COAL MEN

The Lehigh Coal & Navigation Co. was host recently to two large parties. Following the convention of the New England Retail Coal Dealers' Association, all those attending visited the mines of the Lehigh company. The following day the engineers, who attended the meetings of the anthracite section of the American Institute of Mining Engineers, visited the property. E. W. Parker represented the Geological Survey at each of these meetings.



RADIUM MINE
Paradox Valley, Colo.

RADIUM INSTITUTE DOING GOOD WORK

Dr. C. L. Parsons Gratified at Success of Denver Laboratory of Bureau of Mines

Radium production at the Denver laboratory of the Bureau of Mines has been reduced to a regular manufacturing basis, according to Dr. C. L. Parsons, who just has returned from a visit of inspection to the laboratory. Dr. Parsons is elated highly over the work being done at Denver, and at the mine in Paradox Valley. He characterizes it as "splendid."

To date, there have been delivered 1,400 milligrams of radium metal. Three hundred and fifty milligrams of this amount was delivered during the last days of June.

Work on a larger scale at the radium mines will be undertaken shortly. Machinery is to be installed to decrease the amount of hand work.

The amount of ore that may be mined under the present lease is limited to 1,000 tons of ore sorted to 2 per cent. After the 1,000 tons are extracted, the mines will be turned back to the Crucible Steel Co.

OREGON GOLD DISTRICTS COVERED BY NEW FOLIO

A number of Oregon gold districts are to benefit from the work of Geologists D. F. Hewitt and J. T. Pardee, who are engaged in preparing a geological folio of the Sumpter quadrangle.

Mr. Hewitt at present is completing the field work by doing reconnaissance work just outside of the quadrangle.

Much credit for the high rating of the library is due to the years of painstaking attention bestowed upon it by Miss — McCord, the librarian.

NEW YORK COMPENSATION LAW PRAISED BY MITCHELL

Chairman of State Industrial Commission Says Its Worth Is Established

Insurance Commissioner Thinks It Should Cover Still Greater Field

John Mitchell, chairman of the State Industrial Commission of New York, believes that the Workmen's Compensation Law in that State is a great success. The law has been in force a year.

"It is a mighty good thing," says Mr. Mitchell. "It places the cost of accident where it belongs, taking it from the individual, who cannot stand it, and putting it on the community. For after all, practically all of the expense involved is passed on to the general public in slightly increased prices."

Mr. Mitchell was asked if the sense of security given workingmen by the compensation laws lessened the incentive to save. In reply to this question he says:

SAYS SAVING IMPOSSIBLE

"I should say it has had no such effect. You must distinguish first between the small class of skilled, organized workmen and the vast number of unskilled laborers. Laborers cannot save, no matter what the incentive. Their wages are lower than they should be. Their pay is so small that a few dollars accumulated quickly disappear in times of unemployment or sickness. Labor's reward has not kept pace with the pay in the trades. Nor has it advanced anything like the cost of living. The lot of the unskilled workman is not enviable."

Mr. Mitchell was asked if the ignorant workman is protected against a scheming employer under the compensation law.

"They all get the same treatment," said Mr. Mitchell, "If an injured employe accepts a private settlement it is necessary for the agreement to be approved by the commission, and, of course, if the workman is not getting fair treatment, we do not accept the settlement. By far the larger number of cases are settled without any fight, on a basis we think fair to both of the parties concerned."

LITTLE DISAGREEMENT

"Between 30,000 and 40,000 awards have been made through us in the eleven months for injuries. On an average, about 75 per cent. of these go through automatically, neither side objecting. In the other 25 per cent. of cases the awards come up for brief discussion. Fortunately, however, the procedure to be followed is marked out so clearly that little is left to argument."

An official of the New York Insurance Department finds some fault with the law. He contends:

"I should like to see the law amended to increase its coverage. It was drafted in the interest of the unions, and although its scope

was afterward increased, it is not broad enough yet. Massachusetts has a better compensation system, which protects all classes of workers. I had hoped to see New York's law amended before this, and believe it will be eventually. The law now specifically exempts from its benefits those employes not included in forty-two groups. Among the exceptions are farm laborers and domestic servants."

METHODS OF INSURANCE

"There are three methods of providing for the insurance required under New York's law. Under the first an employer may pay his own losses by satisfying the commission of his financial ability to pay such compensation himself. Where the method is elected the commission requires the deposit of securities to make payment of awards certain. The second method allows the employer to insure through the State fund, the third provides for insurance through a stock corporation or mutual fund. There are only sixteen mutual associations operating, and by far the largest amount of insurance is carried in the stock companies. The last method has proved the most popular.

"Where an employer chooses to pay his own losses direct there is an incentive for him to discriminate against men with dependent families because of the much higher penalties provided for such cases. The death of a single man with no dependent relatives is less expensive for the employer."

GEOLOGIST FORESAW THE POSSIBILITY OF MT. LASSEN ERUPTION 20 YEARS AGO

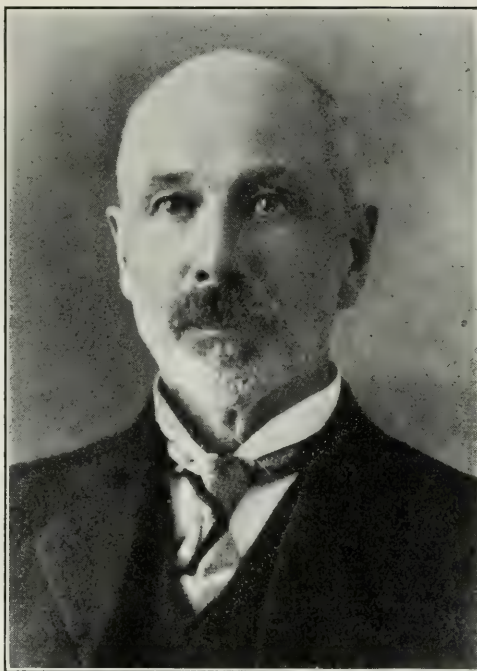
J. S. Diller, a geologist of the U. S. Geological Survey, will visit Lassen Peak where he will make detailed notes in connection with the eruption. Twenty years ago Mr. Diller made a geographic reconnaissance in this territory, and at that time predicted the likelihood of an eruption in this formation.

Due to his special work along this line, he is particularly fitted to interpret all features of the present phenomenon.

The last outbreak at Mt. Lassen is the first indication of genuine heat. Hot stones were ejected from the crater of the volcano which set fire to timber. Such quantities of snow were melted that serious floods were caused in the valleys.

In the opinion of the officials of the Geological Survey, a catastrophe would have resulted had this region been populated densely, as is the case on the slopes of Vesuvius.

Some of the newspapers are claiming that this eruption is one of the press agent features of the Panama-Pacific Exposition. They claim it is being greatly over-played in the news dispatches sent out. The Government experts, however, declare that the eruption is one of consequence, and discourage excursions to the immediate vicinity of the mountain.



J. S. DILLER

Geologist who is studying eruption at Lassen Peak

GOVERNMENT IS TO SUPPLY INFORMATION SERVICE

In order to facilitate the distribution of information as to what the Government is doing, the Library of Congress is compiling a list of all Federal activities. Requests for information will be referred to the Librarian, who will indicate the exact person with whom to communicate to secure all desired information. This will save much useless work on the part of the Government employes, who are constantly receiving requests for data not available in their department.

PHOSPHATE DEPOSITS FOUND IN NORTHEASTERN UTAH

The existence of formations containing phosphate in what is believed to be commercial quantities in the Uinta Mountains in northeastern Utah, have been reported by a party of Geological Survey men. On the strength of this report a considerable territory has been placed in the reserve until it can be examined more in detail or until Congress can pass some law adequate to its disposal.

Heavy purchases of coal are being made by the Greek government in the United States. The present sentiment in Greece is decidedly favorable to the American products.

LARGE NUMBER OF PROMISING PATENTS RELATING TO MINING ARE ISSUED

Bit-Holder for Mining Machines Invented and Assigned to Jeffrey Manufacturing Company—Metals Recovery Company Gets Rights of New Ore Concentrating Apparatus

Patents of interest to the mining industry have been granted during the past month as follows:

Bit-holder for mining machines, No. 1,140,173. This invention is by Nils D. Levin, of Columbus, Ohio. It has been assigned to the Jeffrey Manufacturing Co. The invention deals with improvements in devices for attaching bits or cutters to the cutting chains or wheels of mining machines. An important advantage is claimed in the location of a wedge which lies substantially parallel to the line of movement of the machine. In the operation of a mining machine it frequently happens that the points adjacent to the cutters come in contact with external objects which may fall accidentally into the path of the moving parts. The arrangement of the wedges is such that accidental contact of the wedges with these external objects will serve to drive the wedges more firmly into their places.

TO REDUCE ORE

Crushing mill, No. 1,139,790. This invention is by James D. Millar, of Milwaukee. The invention is devised for the purpose of reducing small particles of ore and other substances to a finely divided state. Another object is to provide a mill in which the crushing action is produced between a pair of crushing heads, one or both of which are given a revolving motion so as to change from one active area to another. The crushing head is mounted on a spindle having an eccentric bearing. Arrangement is made for forcing a blast of air or fluid between the crushing heads.

PATENTS STRONG DRILL

Miner's Drill, No. 1,140,077. This invention is by Samuel T. Skeen, of Sandoval, Ill. The invention relates particularly to coal drills and is claimed to be an improvement on a former drill patented by Mr. Skeen. One of the objects of the new drill is to produce a strong drill structure. It also includes other improvements.

REDUCES VIBRATION

Power Rock Drill, No. 1,140,185. This patent is by Frederick P. Porter, of Kellogg, Idaho. The invention is designed particularly to provide a power rock drill of the hammer type adapted for drilling holes in

the sides and roof of a mine. It is arranged with the idea of reducing vibrations to a minimum.

IRON ORE TREATMENT

Treatment of Subdivided Ores for Agglomerating or Reducing them and Apparatus therefore, No. 1,142,324. This invention is by Gustaf Gröndal, of Djursholm, and Herman Nilsson, of Nyhammar, Sweden. This invention is applicable more particularly to iron ore which is collected in the form of hard porous lumps. A furnace necessary for the carrying out of the method also is patented. The subdivided ore is moistened and packed in iron receptacles, having each end open. The mass of ore is provided with longitudinal channels through it. The receptacles are arranged in long series against a suitable fire place. The combustion products are led through the channels in the series of containers. As soon as the ore in the foremost receptacle has been treated sufficiently, the container is removed, and the remaining containers brought toward the burner. Another receptacle is filled with fresh ore and placed at the further end of the line.

HAS RADIUM PROCESS

Method of Treating Radio-Active Ores and Intermediate Products, No. 1,142,154. This invention is by Dr. Erich Ebler, of Heidelberg, Germany. The invention relates to a method of treating radio-active ores in raw sulphates, silicates, phosphates and other salts of radium and mesothorium. It consists in treating the materials with reducing agents and thereafter extracting with solvents for the radio-active salts formed by the reducing process.

GERMAN GETS PATENT

Manufacture, Isolation, and Enrichment of Radio-Active Substances by Absorption from Solutions, No. 1,142,153. This invention is by Dr. Erich Ebler, of Heidelberg, Germany. The invention relates to the use of precipitated hydrated peroxide of manganese. The gel of the hydrated peroxide of manganese is a valuable absorptive material, as it has higher absorptive property for radium than for barium, if both these substances are present at the same time in the solution. The saving of the radio-active compound is described.

PORTABLE MILL

Rock-Crusher No. 1,142,116. This invention is by Edward H. Moyle, of Los Angeles. The invention is intended for use in pulverizing rocks and ores. The rock crusher first breaks the rock along the lines of least cleavage, it is claimed, then other crushings transform it into a pulverulent mass of desired mesh. The idea is to provide a simple device made of the fewest parts, and which are readily dissociable. The machine is said to have a minimum of bearings. It is convenient for transportation into the difficult places of access and is assembled quickly. A degree of fineness of the ore may be regulated during the operation of the machine. A device is provided with the intention that no material damage may be occasioned by the entry of any substance harder than that calculated for the crushing power of the jaws.

ASSIGNED TO LINK-BELT

Coal-Washer, No. 1,142,060. This invention is by Albert J. Sayers, of Chicago. The patent has been assigned to the Link-Belt Co., of Chicago. Various technical improvements have been included in this washer.

GETS CLEAVER CONCENTRATION

Magnetic Ore-Separator, No. 1,141,833. This invention is by Sven Ragnar Salwen, of Grangesberg, Sweden. It has been assigned to the American Grondal Co., of New York. The invention is principally devoted to an improvement on an existing magnetic separator. The object is to construct the apparatus so as to obtain cleaner concentration, and a larger capacity than other separators of the same size, without increasing the losses in the tailings.

STOPS CAR QUICKLY

Mine Tipple-Car, No. 1,141,442. This invention is by John Cozilets, of Coupon, Pa. The invention relates to car brakes, and is especially adapted to use on tipple-cars, wherein the car is drawn up the incline by any suitable means. The brake on the car is so arranged that should the cable part, the brake would become effective and stop the car. It eliminates the human elements, once that it is locked in its serviceable position. Other minor advantages are claimed for the invention.

CONCENTRATING PROCESS

Ore-Concentrating Apparatus No. 1,141,377. This invention is by John M. Gallow, of Salt Lake City, Utah. It has been assigned to the Metals Recovery Co. The apparatus as designed by Mr. Gallow, consists of a series of tanks or agitating chambers. His process is distinguished by usual amalgamation in that it relates more particularly to the flotation process, wherein a certain percentage of oil, or two dissimilar oils, or an oil and an acid, or an oil and an alkali, are mixed with finely

ground ore pulp and the mixture then subjected to a violent agitation by means of mechanical propellers.

PORTABLE SCREEN

Coal-Cleaner, No. 1,140,999. This invention is by James R. Montgomery, of Frankfort, Kans. The object of the invention is to provide a portable coal screening apparatus especially designed for the use of local coal dealers for screening out coal before sending it to the customer, so that it is delivered free from dust. It also provides for the simultaneous screening and loading from the bin into a vehicle.

PATENTS BRIQUETS

Process for Converting Fine Coal into a Marketable Fuel, No. 1,140,735. This invention is by John Evans, of Melbourne, Victoria, Australia. The invention has been designed mainly to utilize the fine black Australian coal, which is a waste product, by compounding it with a binder, which is soluble in water, and then molding it under pressure in a suitable form, and finally giving it a coating which will permit of its being handled and stored. The coating also serves the purpose of protecting the fuel from moisture and loss of calorific value by atmospheric influence. Flour paste, starch, molasses and a mucilage made from grain are mentioned as binding materials. After molding, the fuel is passed through a chamber which is heated to 212° Fahrenheit. The coating is obtained by immersing the briquets in pitch, which forms its impervious coating. Afterwards a second heating which calls for a temperature of from 400 to 500° Fahrenheit is resorted to. Immediately thereafter the coating is filled by a blast of cold air to solidify the coating. The inventor states that he is aware that pitch has been used for this purpose previously but other efforts have been too costly to permit of its proper use.

GOES TO PITTSBURGH COMPANY

Apparatus for Sintering Ores, No. 1,140,710. This invention is by Albert F. Plock, of Pittsburgh. It has been assigned to the Pittsburgh Metallurgical Co., Inc. The invention relates to apparatus used in sintering ores, flue dust, and similar finely divided materials containing carbon, sulphur, or other combustibles. Special features of the invention provide for the igniting of the oils and for the creation of a draft through the body of materials being sintered.

IMPROVES MINE CAR

Ore-Car, No. 1,140,497. This invention is by Wm. C. Carr, of Buffalo. The principal feature of the invention is an extremely quick acting and very efficient brake device which includes a series of flat brake shoes adapted to be forced into contact with the surface of the rails. It also endeavors to make equal the pressure on each of the shoes.

MAKES NOVEL BIN DOOR

Ore-Pocket Door No. 1,440,436. This invention is by Charles G. Baumgartner, of Chicago. The invention has to do with a door which rotates on a shaft which will permit the closing of an ore or other bin during the discharge of material.

MINER'S LAMP

Miner's Acetylene-Gas Lamp, No. 1,142,699. This invention is by Justus A. Gustafson, of Idaho Springs, Colo. The lamp embodies certain new features claimed to make it simple, compact and reliable, so as to be conveniently used by miners.

PATENTS JIG

Ore-Treating Apparatus, No. 1,142,497. This invention is by Rubin Colvin, of Park City, Utah. The invention relates to improvements in ore treating apparatus, and has particular reference to the means for effecting the reciprocatory movements of tables embodied in such apparatus. An important object of the invention is to provide means for reciprocating a plurality of tables arranged side by side. This can be done by simple construction, it is claimed, and is strong, durable and not liable to derangements.

SCOURS ORE

Ore-Disintegrator, No. 1,142,462. This invention is by Leon St. D. Roylance, of San Francisco, Cal. The invention relates to improvements in the apparatus used in the disintegration of rebellious ores, and more particularly in that class of apparatus in which an electric current is used to effect or aid the separation of the metals and the disintegration of ores. The object of the invention is to provide simple, cheap and efficient apparatus for the purpose mentioned, in which means for agitating the ores undergoing treatment is included. Means also is provided for scouring the ores. A plurality of active disintegrating zones is arranged.

SPREADS MATERIAL

Shaker-Plate for Ore and Coal Washers, No. 1,142,434. This invention is by Moses James, of Lansford, Pa. The aim of the invention is to provide a shaker-plate so formed that in operation it will act to spread effectually the material being washed over a maximum area. This assures a more thorough washing of the ore or coal. Another aim is to construct a shaker-plate so that in operation it will create "life" in the material being washed. The invention also contemplates forming and arranging the riffles in the plates so as to strengthen the plate and prevent its sagging. Another idea of the riffles is to retard the material in its movement over the surface of the plate, thereby further assuring thorough washing. It is claimed that

the riffle plate may be employed in treating ore or coal whether wet or dry.

NOVEL POWER CONTROL

Mining Machine and Truck, No. 1,142,348. This invention is by Edwin R. Merrill, of Columbus, Ohio, who has assigned it to the Jeffrey Mfg. Co., of Columbus. The principal object of the invention is to provide an improved arrangement of controlling and power-transmitting elements, adapted for driving or retarding the truck wheels and cable reel with which the truck is equipped.

MINING TO GET SPECIAL ATTENTION AT CONFERENCE

Pan-American Scientists To Gather in Washington in December

Of great interest is the Pan-American Scientific Congress that will convene in Washington beginning December 27, and concluding its sessions January 8. Through the co-operation of the Latin-American countries, the second Pan-American Scientific Congress, likewise held under the auspices of the United States Government through the Department of State, bids fair to be not only thus far the greatest Pan-American Congress, but the most important international scientific congress ever held in the United States. The first congress of this name was held in Santiago, Chile, in 1908.

The present European war has brought the western hemisphere suddenly face to face with grave economic problems that invite the serious attention of scientists and experts in the various fields of applied science. The Scientific Congress will concern itself with the constructive discussion of these as well as with the contributions in the domain of pure science wherein great advance has been made since the last congress in Santiago, Chile. Science is comprehensively defined by the congress and includes, under nine heads, such main subjects as: Anthropology, astronomy, meteorology, and seismology; conservation of natural resources, agriculture, irrigation, and forestry; education; engineering; international law, public law, and jurisprudence; mining and metallurgy; economic geology, and applied chemistry; public health and medical science; transportation, commerce, finance and taxation.

The significance of the congress, through the importance of the above subjects, is enhanced greatly through the international reputation of the persons chosen to arrange for the program of the different sections of the congress, most of whom have an intimate first-hand acquaintance as well with the local resources, development and scientific interest in the various Latin-American countries.

THE NATION'S FUEL BILL

That the annual industrial fuel bill of the United States could be cut in two and at least \$150,000,000 saved yearly through the use of modern improved steam engineering appliances and of the gas producer and gas engine, is the opinion of Horace C. Porter, chemical engineer of the U. S. Bureau of Mines, as expressed in a lecture delivered before the Department of Chemical Engineering at the University of Pittsburgh. To attain these results he said an increase of 8 per cent in the utilization of the energy of this coal would be sufficient. This increase, he declared, is entirely possible through the means mentioned.

"The Nation's coal bill," says Mr. Porter, "amounts to about \$1,500,000,000 a year, or about \$60 for each wage-earner." The following are other extracts from Mr. Porter's address:

"The United States is far ahead of other nations in coal production, having passed Great Britain, the nearest competitor, in 1899, and now surpassing her by nearly 100 per cent. Since we export very little coal and other nations export a great deal, our home consumption surpasses that of other countries by even a much greater margin. Our industries are greater, to be sure, but we must face the fact also that an abundance of fuel resources has made us careless of efficiency in their use.

"The 570,000,000 tons of coal produced in 1913 in the United States were used approximately as follows:

Domestic, 120,000,000 tons; other heating of buildings, 85,000,000; coke and gas, 75,000,000; locomotive and steamboats, 110,000,000; industrial power (including central power plants), 180,000,000.

"Scientifically the methods of utilizing coal may be classified into (1) combustion, (2) carbonization, and (3) gasification by partial combustion. Probably 80 per cent of the coal consumption in America comes under class 1 *i. e.*, it is directly burned in air, and we see therefore the great importance of improving practical methods and appliances for combustion.

"It is not an idle dream to look forward to the time when there will be many central power and heating stations in the form of large by-product coke-oven plants, placed at the mines or near large cities. As influences leading to this end, we may mention the following modern advances in long distance transmission of electric power, the increasing demand for and value of coal by-products for chemical purposes, the successful use of coke as a domestic and industrial fuel, the development of the gas engine, and the growth of public opposition to the smoke nuisance.

"Spontaneous combustion in stored coal results from this slow oxidation by the air at ordinary temperatures. It is not, in any important degree, a matter of bacterial action, or fermentation. When conditions as to the size of coal and manner of piling are such that the rate of heat production by oxidation is greater than the rate of heat loss by convection currents and radiation, the temperature rises. One of the most important practical considerations is whether an adequate air supply can penetrate to an inner section of the pile where the heat loss is slow. Fine slack coal does not heat seriously in the interior of a pile, if no lump is present. If, however, the interior of a pile consists largely of fine coal and the outer and lower sections of lump with very little fine, one of the worst possible conditions is maintained, and spontaneous fires commonly result from such a set of conditions.

"Deterioration of coal in storage is due to slow oxidation, not to loss of volatile matter. The deterioration in heating value is not as great as has commonly been supposed. With high-grade bituminous and semi-bituminous coals, careful determination has recently shown that this loss amounts to less than 1 per cent in one year's exposure to the weather, and less than 3 per cent in five years. With our middle western and western coals or lignites the loss is greater but probably does not exceed 4 or 5 per cent in one year in any case. Deterioration in size or physical character

may be somewhat more serious, and spontaneous heating, even though moderate in degree, causes very serious loss. Deterioration of any kind may be quite largely prevented by submergence storage under water."

POTASH DEPOSITS IN WEST RECEIVE SPECIAL ATTENTION

H. S. Gale and N. H. Darton, geologists of the Geological Survey, are engaged in the examination of outcrops and prospects in the different regions of the West and Southwest, where it is thought saline deposits exist, which possibly include potash in workable amounts. Mr. Gale is giving a part of his attention to the investigation of desert deposits in Nevada, California and Oregon. He will examine a large number of localities where discoveries of potash salts and nitrates have been reported.

Mr. Darton will continue his reconnaissance examination of "red beds" in Permian and Triassic in the Southwest, particularly in New Mexico. He will endeavor to locate centers of maximum desiccation and consequently of maximum deposition of salts in the "red beds" basin of Colorado, New Mexico, West Texas and Oklahoma. This work is being done with a view to determining, so far as can be done from a study of out-crops, the regions where potash deposits, if they are present at all in basins, would be most likely to occur.

WOMEN BEING TRAINED FOR MINE RESCUE WORK

By training women in first-aid work the Bureau of Mines believes great good will result in all mining camps following similar procedure.

In mine disasters in the past women of the camps have not been able to extend any great amount of aid owing to a lack of knowledge of the proper methods to pursue in resuscitating miners who have been overcome or who have been injured in explosions. By giving first-aid training to the women who desire it, an effective force will be on hand at all times to help when it is most likely to be effective.

Reports to the Bureau of Mines show that school teachers form the greater percentage of those taking this special training.

It is expected that this work will not be confined to routes of the Bureau of Mines rescue cars, but will be initiated by private companies or by the miners themselves throughout the mining regions of the country.

To Study Rare Minerals

Especial studies of platinum and manganese are soon to be started by the Bureau of Mines.

UTAH COPPER COMPANY HAS GOOD QUARTER

The total amount of ore treated by the Utah Copper Company for the first quarter of 1915 was 1,396,341 tons, being 361,038 tons more than for the fourth quarter of the year 1914. The average grade of the ore milled was 1.4393 per cent. copper, as compared with 1.5062 per cent. copper for the previous quarter. The average extraction for the quarter was 65.72 per cent., which was an improvement over the previous quarter, when the average was only 64.86 per cent. However, the extraction for the quarter was still somewhat low, on account of a portion of the copper values having been in the form of carbonates.

After making allowances for smelter deductions and without crediting miscellaneous income, the average cost per pound of net copper produced was 8.188 cents, as compared with 7.731 cents for the previous quarter. This increase in cost was due to winter weather conditions. If the net miscellaneous earning in Utah, including those from the Bingham & Garfield Railway, were credited to the cost of operations, the net cost per pound for the quarter would be 7.289 cents. There will be an improvement in cost during the second quarter of 1915.

Only the Magna Plant was operated at full capacity until the end of January when, owing to better business conditions and a greater demand for the metal, the partial operation of the Arthur Plant was resumed, and thereafter both the Arthur and Magna Plants were operated at approximately two-thirds of their normal capacity until the third week in March. The demand for the metal being still on the increase at that time, the output was increased to a basis corresponding to about 75 per cent. of normal, and on March 27 both plants resumed operations at their full capacity. Of the total tonnage treated during the quarter, the Magna Plant milled about 68 per cent. and the Arthur Plant about 32 per cent.

The usual difficulty of conducting surface operations at the mines during the winter season caused some delay to the stripping work. Nevertheless, there was removed from the entire property a total of 1,143,596 cubic yards of capping, as compared with 955,675 cubic yards removed during the fourth quarter of 1914, being an increase of 187,921 cubic yards. The average per month during the quarter was 381,199 cubic yards, as compared with 318,558 cubic yards for the previous quarter.

Under the conditions that prevailed throughout the quarter, the business of the Bingham & Garfield Railway was satisfactory. An average of 10,978 tons of ore per day was transported and an average of 2,134 tons per day of other freight was handled, making a total of 13,112 tons per day, as compared with 9,798 tons per day for the previous quarter.



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The American Mining Congress is a voluntary association supported by the dues and fees of its members. It is striving to bring about:

First—Safety and efficiency in mining operations.

Second—Intelligent conservation with a view to the highest development and use of our mineral resources.

Third—The stimulation of investment in practical mining operations by showing that mining is a legitimate business when intelligently conducted.

Fourth—Uniformity in state laws governing mining operations carried on under like conditions.

Fifth—Such federal co-operation through research and investigation as will furnish the basis for intelligent state legislation, and will solve those problems of economical production, treatment and transportation which are essential to an increase in mineral production.

Sixth—The improvement of the economic conditions underlying the coal mining industry.

If you are interested in this work, now is the time to help; do not wait until those who are now carrying the burden have become discouraged.

The appended application blank will show the way. Come in and bring the neighbor who should join this movement. Mail application to

THE AMERICAN MINING CONGRESS

Munsey Building, Washington, D. C.

THE AMERICAN MINING CONGRESS

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I hereby make application for membership in THE AMERICAN MINING CONGRESS and agree, if accepted, to abide by the By-Laws, Rules and Regulations of said organization and to pay the dues required by same.

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THE MINING CONGRESS JOURNAL

AUGUST	CONTENTS	1915
<hr/>		
DEATH OF DR. JOSEPH A. HOLMES		361
NEVADA CAMPS BOOMING.		366
HISTORY OF GOLD MINING IN EASTERN STATES		367
ARIZONA'S MINERAL PRODUCTION		369
MID-YEAR REPORTS PROVE POPULAR		370
UNITED STATES PROVIDES FOR INJURED ALASKAN WORKERS		370
NEW PICTURES FROM ALASKA		371
BUREAU OF MINES PRODUCES RADIUM CHEAPLY.		372
HOW VANADIUM OCCURS		373
BUREAU OF MINES COOPERATIVE WORK SUCCESSFUL		374
UTAH'S MINERAL PRODUCTION		375
OPPORTUNITY FOR DEVELOPING SOUTHERN GOLD DEPOSITS		376
IDAHO'S MINERAL PRODUCTION		377
RECENT STATE LEGISLATION		378
AMERICAN TIN PROSPECTS BRIGHTER.		380
VAN H. MANNING LIKELY TO HEAD BUREAU OF MINES		381
DEMAND FOR CHEAPER SULPHUR		381
RECENT MINING PATENTS		382
DEATH-RATE IN INDIANA MINERS DECREASE.		384
EDITORIAL		385
REPORT ON DUST EXPLOSIONS NEARLY READY.		390
SEARCH FOR POTASH CONTINUES		391
MINERAL LAND DECISIONS		392
CLAY TALLMAN		394
LATEST TRAFFIC DEVELOPMENT		396
ENGLISH ANTIMONY.		401
RECENT LEGAL DECISIONS		402
DOLLARS AND CENTS VALUE OF LIFE LOST IN MINES		404
BUREAU OF MINES EXPERTS ASSIST POLICE.		405

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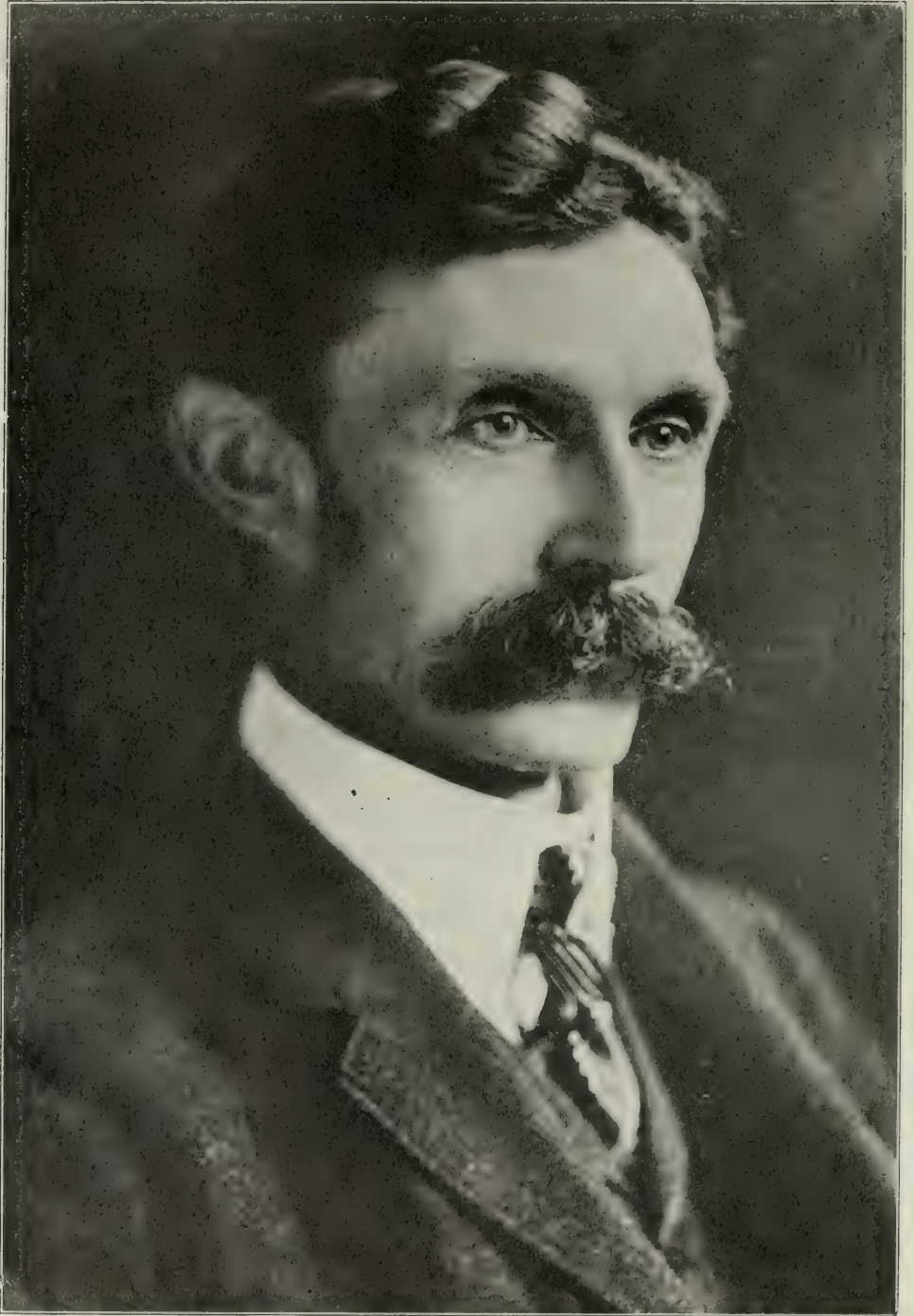
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PASSING OF JOSEPH A. HOLMES ROBS MINING INDUSTRY OF NOTED WORKER

Late Director of Bureau of Mines Sacrificed His Life in Effort to Advance Humanitarian Work in His Charge—Nation's Great Pay Tribute to Man Who Conceived "Safety First" Slogan

Death robbed the mining industry of one of its most efficient leaders July 13, when Dr. Joseph A. Holmes, Director of the United States Bureau of Mines, passed away in Denver.

Dr. Holmes has been called, aptly, the "Father of the Bureau of Mines." There is little question that he is entitled to the credit for having originated the "Safety First" slogan. He is recognized in Washington as having towered head and shoulders above men in his profession. Those who worked side by side with the late director are unanimous in their testimony that his death is due to overwork. Long hours, close confinement, as well as exposure to poisonous gases in mines and the hardships of a professional trip into Alaska are responsible for undermining his never too strong physique.

NATIVE OF SOUTH CAROLINA

Dr. Holmes was born at Laurens, S. C., November 23, 1859. His education was begun in the public schools of South Carolina, and was completed at Cornell University, where he was graduated in 1881. His higher education was largely specialization on the chemistry of explosives, metallurgy, geology, electricity, general physics, surveying and mining. He traveled extensively in the mining regions of the United States, Germany, France, Belgium and Great Britain.

Again he specialized upon two things: the lessening of the loss of life in mines and the waste of resources.

For ten years previous to 1891 Dr. Holmes was professor of geology at the University of North Carolina. From 1901 to 1903 he was geologist for the same state.

At the St. Louis World's Fair he organized and had charge of the Department of Mines and Metallurgy. The success of this exhibit was due to Dr. Holmes' initiative and efforts.

Following the World's Fair, he planned the Government fuel investigations. He was offered supervision of this activity. It was impossible for him to give this work the time that it would require, and at his suggestion a committee was appointed to look after the work. He consented to serve upon the committee.

PROBES EXPLOSION CAUSES

Under the direction of the U. S. Geological Survey, extensive investigations of mine explosions were begun in 1907. This was placed under the supervision of Dr. Holmes. The fuel investigation and the work upon mine explosions brought out the great need for further extension of this work.

Noting the remarkable results of the work being conducted by Dr. Holmes, and having realized for a long time the necessity of more Government aid for the mining industry, the American Mining Congress took the first steps toward the formation of the Bureau of Mines. Throughout the long fight necessary to secure the support for this new Government bureau, the American Mining Congress took the leading part. From the time of the inception of the idea leading members of the Mining Congress urged Dr. Holmes as the most desirable man to direct the bureau. This view was accepted by the Secretary of the Interior and by the President, and resulted in Dr. Holmes' appointment, July 1, 1910.

With the establishment of the Bureau of Mines, Dr. Holmes inaugurated the movement for mine rescue work in this country by private operators, by the states and by the Federal Government. Mine rescue stations are now located in both the metal and coal mining districts of the country.

At the suggestion of Dr. Holmes, President Roosevelt in 1907 secured the appointment, by

the governments of Great Britain, Germany and Belgium, of a distinguished engineer from each to visit the United States. Dr. Holmes with these engineers visited the mining districts of the United States with the idea of ascertaining the extent to which safety practices used in other mining countries might be introduced in the United States.

STUDIES EXPLOSIVES

As a result of this tour and the recommendations made by the noted engineers, Dr. Holmes began investigations of mine explosions by ordering a systematic study of the explosives used in mining, and began a research dealing with the use of electricity in mining.

Dr. Holmes personally took part in mine rescue work whenever possible. He felt that this actual experience was most valuable in guiding him in the general administration of his work.

Another successful work conducted by Dr. Holmes was the structural-material investigations. These had to do with the value of the various structural materials with reference to their fire-resisting qualities. He was one of the first men in the country to call attention to the large per capita fire waste in this country, and aided greatly in the campaign to reduce it.

Dr. Holmes' work dealing with the effects of the San Francisco earthquake and fire on structural materials is regarded as a masterpiece. It has been used as a work of reference by many of the most distinguished foreign experts. This work has since been taken over by the Bureau of Standards.

Public interest in the value of fuels was quickened by Dr. Holmes' work in this connection. He is the author of several papers having to do with this feature of the work.

METAL MINING PROBLEMS

While the Bureau of Mines has paid close attention to the coal mine explosions and the safeguarding of the lives of coal miners, it must not be understood that Dr. Holmes was engaged in this to the exclusion of the work in metal mining problems. He was very familiar with every feature of metal mining, and is responsible for the establishment of the Bureau of Mines Laboratory at Denver, where important discoveries with regard to the recovery of gold from low-grade ores have been made. This same laboratory has done remarkable work in the development of radium in the United States.

Offices of the Bureau of Mines were established by Dr. Holmes in San Francisco and Salt Lake City, with the idea of giving special and intimate attention to the problems of metal mining.

Dr. Holmes was a member of several commissions which investigated smelter fumes. He wrote a considerable portion of the report of the Selby Smelter Fume Commission, and was influential in securing certain adjustments of many of the differences which had arisen between smelter companies and the residents of the vicinity.

One of the very notable works started by Dr. Holmes was the investigation into the mining and health conditions in the Missouri zinc region.

HIS WORK GOES ON

Publications which will be issued by the Bureau of Mines in the next year or more are those planned and ordered by Dr. Holmes. They cover a wide field of activity in which metallurgical problems form a considerable portion. In fact, Dr. Holmes' genius will pervade the Bureau for an indefinite period.

Dr. Holmes is personally responsible for the experimental mine at Brucetown, Pa., which is the only mine of this kind in the world. The importance of this experimental working is emphasized by editorial comment from a London publication, which appears in another column of the JOURNAL.

That the loss in mining and waste in utilizing mineral resources of the United States amounts to more than \$1,000,000 per day was shown by Dr. Holmes. He called attention to the fact that the loss of \$75,000,000 annually is resulting from the use of bee hive ovens in the making of coke. Long before the European War so emphasized their need, he urged the installation of by-products ovens, and the use of the by-products. He compiled figures showing that the annual waste in metals and brass furnace practice amounts to \$4,500,000.

President Roosevelt named Dr. Holmes as one of the members of the National Conservation Commission which had charge of the inventory of the nation's mineral resources.

WAS MINING CONGRESS MEMBER

He was a member of The American Mining Congress, The American Institute of Mining Engineers, and other prominent organizations.

Van. H. Manning, Acting Director of the Bureau of Mines, in commenting upon the death of Dr. Joseph A. Holmes, said:

"In the death of Dr. Holmes, the people of the United States lose one of their most remarkable and efficient public servants. And the saddest part of it all is that Dr. Holmes is a victim of overwork, a too great devotion to the duties which had been assigned to him in behalf of the safety of the million miners in the United States. He was one of the most enthusiastic, indefatigable workers with whom I ever had the pleasure of associating. His mind was continually upon the yearly death toll of the miners, and although taken away in the prime of his life he has accomplished much in reducing the terrible death-rate. In the last five years of his life he saw a slowly but steadily decreasing death-rate and, while it gave him much joy, it only added to his almost superhuman efforts in behalf of the men.

"It is thought that Dr. Holmes' frequent visits to mines in which there were disasters and his continual insistence of going where his trained rescue crews went, sharing the dangers that should have gone only to more robust men, seriously affected his health. His trip to Alaska two years ago to study the great coal fields there resulted in many hardships and severe exposure. It is believed that this hastened the end.

"Dr. Holmes is indeed a martyr to the cause of safety among the miners and his name is

added to the honor roll of three bureau rescuers who have given their lives to this cause. The mining industry suffers a keen loss in his death."

An idea of the devotedness of Dr. Holmes to his work is gained by the knowledge that he at one time was offered \$20,000 a year by the United States Steel Company. At another time he was tendered the presidency of a university, with a salary of \$10,000 a year. It is stated at the Bureau of Mines that various offers of \$10,000 a year were received and declined by Dr. Holmes. His salary as Director of the Bureau was \$6,000 a year.

FUNERAL IMPRESSIVE

The funeral services for Dr. Holmes were conducted at the Church of the Covenant in Washington. The ceremony was attended by a large number of the nation's prominent men. The immense auditorium of the church could not accommodate the vast number of persons who wished to pay this last tribute to a man whose accomplishments were so great.

The honorary pallbearers were: Franklin K. Lane, Secretary of the Interior; Josephus Daniels, Secretary of the Navy; William B. Wilson, Secretary of Labor; Gen. William C. Gorgas, Surgeon General of the Army; Peter M. Wilson, Chief Clerk of the Senate; R. S. Woodward, President Carnegie Institution; Samuel L. Rogers, Director of the Census, and Charles M. Galloway, Civil Service Commissioner.

The active pallbearers were: George S. Rice, Dr. C. L. Parsons, O. P. Hood, Dr. G. A. Hulett, Dr. D. T. Day, and Dr. C. E. Munroe.

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Publications Throughout Country Laud Achievements of Dr. Holmes

Editorials from some publications which commented on the death of Dr. Holmes follow:

A True Public Servant

From the *Journal*, Boston.

Continuous assault upon the United States Government payrolls by professional gougers and place snatchers is not the whole story of our Government service, though the prominence of politically-fed incompetents seems often to obscure rather than emphasize the solid works of the competent and earnest. The record of the late Joseph Austin Holmes, director of the Federal Bureau of Mines, is a token of the best in government and citizenship; it stands as a reminder that behind the blatant army of political roustabouts is the corps of efficient, busy experts who do the real work of government and do it well.

Dr. Holmes' name had been familiar for years in reports and studies relating to mine safety. Since 1910, when President Taft took him from the Geological Survey to head the newly-created Bureau of Mines, Dr. Holmes had devoted much of his time to removing risks from one of the most notorious fields of industrial hazard. The bureau has made big progress. New discoveries in coal mine dangers have been

followed by new safety devices to offset them. Hardly a year has passed without development of some new safeguard originated or encouraged by the bureau. Hundreds of mine horrors have been averted and thousands of lives saved.

Though his death, of tuberculosis, is said to be the direct result of overwork, Dr. Holmes would not have liked the title of martyr. "True public servant" perhaps is the better epitaph.

Should Be On Roll of Honor

From the *Dispatch*, Pittsburgh.

Pittsburgh, and indeed the whole mining industry, will learn with sincere sorrow of the death of Dr. Joseph A. Holmes, director of the Federal Bureau of Mines. In his work here, in connection with the Government Testing Laboratory, and later as organizer of the Mine Rescue Service, Dr. Holmes won many fast and firm friendships. His whole-souled devotion to duty and his missionary zeal in lessening the risk of workers in mines really shortened his days, his death at the age of 55 being due to tuberculosis contracted by his determination to supervise by personal example and experience the details of the work of his bureau in the field. Never robust, the strain was too great. It has been well said that the name of Dr. Holmes rightfully belongs on the roll of honor with his mine rescue workers, who have sacrificed their lives at their posts of duty.

Although he will be remembered chiefly as the "Father of the Bureau of Mines" and its work, Dr. Holmes is credited also with having been the originator of the "Safety First" movement that has swept the country in recent years. He was a type of the scientists who regards his labors as for the benefit of mankind and combined in an exceptional degree the ability to deal with practical conditions and to grapple with the problems of research.

Like Edward A. Mosely

From the *Herald*, Boston.

It epitomizes the career of Dr. Joseph A. Holmes, head of the Federal Bureau of Mines, to say that he aimed to do for the men working underground what Edward A. Mosely of this state has done for the railroad employes of the land, and particularly for the brakemen on the long freight trains.

Loss to Humanity

From the *Herald*, Washington.

The death in Denver of Dr. Joseph A. Holmes, director of the United States Bureau of Mines, is a loss to the cause of humanity. Almost his entire life was devoted to the study of the methods and the perils of mining, with the purpose of providing safeguards against accidents that kill and maim. He was an expert of the highest qualifications in explosives and had acquired a thorough practical knowledge of mining and the sources of its dangers. In the past twelve or more years he found the

opportunity, in the service of the Government, to use his knowledge and experience in the work of saving human life, with the result that the death-rate in the mining industry in this country has been reduced materially. Professor Holmes' tireless efforts were not confined to the prevention of accidents. Under his direction the work of rescue after accidents had occurred was made a science, and hundreds, if not thousands, of lives have been saved because the most modern appliances and methods could promptly be called into service. Professor Holmes was absorbed in this work, to which he gave the closest personal attention, and his death is attributed by his associates to over-exertion and disregard of his own health in his enthusiastic devotion to the service of mankind performed without ostentation or acclaim. With his death a noble career is ended. The greatest tribute which his country can pay him is in the continuation of his great work where he laid it down.

Lessened Life Loss His Memorial

From the *Post*, Boston.

The death of Dr. Joseph Austin Holmes, director of the Federal Bureau of Mines, deserves more than a mere passing note. For what he did in the cause of humanity and for his practical martyrdom to overwork, this man's name should long be held in honored memory by all who toil in the underground places.

Dr. Holmes organized the campaigns of "safety first" in the mines of the country; he trained rescue crews the country over; he proved new theories as to explosions; he underwent mine dangers in order to carry his plans into effect, and the evidence of his service is found in the greatly reduced loss of life in mines since he took charge of the bureau.

The better conditions in all of our mines are a memorial more noble than any of pompous marble or sculptured bronze.

Dies Martyr to Science

From the *Herald-Dispatch*, Utica, N. Y.

Dr. Joseph A. Holmes, director of the Bureau of Mines of the Department of the Interior, since its creation five years ago, died in Denver, it is said, from overwork.

Dr. Holmes was born at Laurens, S. C., on November 23, 1859. He graduated from Cornell as a bachelor of science in 1881. In that year he became professor of geology and natural history and served until 1891. He had since been one of the institution's lecturers. From 1891 to 1904 he was State Geologist of North Carolina. He was in charge of the United States Geological Survey laboratories for testing fuels and structural materials at St. Louis in 1904-07 and subsequently at Pittsburgh. In 1907-10 he was chief of the technological branch of the Geological Survey in charge of the investigations of mine accidents in 1907-10. He was chief of the department of mines and metallurgy at the St. Louis Exposition. Dr. Holmes had been director of the Bureau of Mines since July 1, 1910. He brought up the bureau to a high

state of efficiency. In his devotion to his work he labored so hard that eventually his health became impaired and he has died another martyr to science.

Deserves Well of Country

From the *Times*, Brooklyn.

The man who, in the United States, first drew public attention in a large and important way to the risks run by miners, and in addition directed his great talents to the diminution and alleviation of such risks, deserved well of his country. For this was what might be called the life work of Dr. Joseph A. Holmes, director of the Federal Bureau of Mines, and one of the great geologists of the world. Dr. Holmes' death was brought about by his own labors, and he had sought refuge in vain from tuberculosis in the rarefied air of Colorado.

It is a sad commentary on admirable public services rendered for years by a man whose own health had become impaired by his labors, that his death was necessary to bring out a proper appreciation by the general public of his character and attainments.

Serious Loss to Country

From the *Post*, Pittsburgh.

In the death of Dr. Joseph A. Holmes, the "father of the Federal Bureau of Mines" and its first and only director from its creation, July 1, 1910, the country has sustained a serious loss that will be felt deeply in a personal way by many thousands not only in the mining industry, but generally. In addition to his recognized ability as a geologist, Dr. Holmes was an organizer, a humanitarian and teacher, and had the faculty of making friends. Dealing with the people and having been an instructor in several schools, he recognized the need of expressing his scientific knowledge in a way that could be grasped by everyone. In his pamphlets and lectures he handled technical subjects in a manner that made them of popular interest. In this way he started safety campaigns among the miners and had them studying and talking understandingly of the gases and other dangers of their vocation. It was Dr. Holmes who introduced the oxygen helmet in this country, and it was he who demonstrated that coal dust is an explosive as well as gases.

Pittsburgh will feel the loss of Dr. Holmes practically as one of its sons, and his name will never be forgotten here, because of the work which he did in this city, and directed from it. The mine-testing station which he established here will stand as a monument to him. It is not claiming too much to say that this testing station, which was established in 1907, and the work done in it by Dr. Holmes, were largely instrumental in inducing Congress three years later to form the Federal Bureau of Mines. Thus is Dr. Holmes' place in the history of the country secure. He set in motion movements for safety in mining that should never cease.

Work Shortened Life

From the *Post*, Chicago.

When Congress created the Bureau of Mines and gave it standing as an independent organization, the *Post* advocated the appointment of Joseph Austin Holmes as the chief of the newly made office. The fitness of Dr. Holmes for the place had been proven by his commanding work along lines of investigation into the causes of mine accidents. He was given the appointment and he gave all his energies to the labor in hand. His hard, devoted endeavor unquestionably shortened his life.

Immediately after the creation of the Mining Bureau insidious efforts were made to secure the appointment as chief of a man less militant in effort than Dr. Holmes. Attempts were made to discredit the able investigator who by his work had proved that means could be employed to stop the awful waste of life that each year marked the course of the mining industry. The fight against Dr. Holmes was a part of the struggle of reaction against progress. President Taft withstood pressure and gave the place to the man who had earned it.

The work of Holmes was well started. The foundations that he laid are of the best. It will be a sin to allow the labor to be lost. It will be lost if politics shall enter into the choice of his successor. The man in the Bureau of Mines, whoever he is, in whom Dr. Holmes had greatest confidence as a worthy workman should be promoted to fill the vacancy.

Yields Life for Others

From the *World-News*, Roanoke, Va.

While rulers of warring nations in Europe are bestowing decorations upon soldiers who perform deeds of valor on the battlefields, the Ruler of all rulers continues to crown His faithful servants. We believe a crown of righteousness was given Dr. Joseph A. Holmes, director of the Government Bureau of Mines, who died Tuesday in Denver. Dr. Holmes was a victim of overwork; he yielded his frail life that others might live. Thousands of survivors of mine disasters owe their lives to his skill and devotion. He was known as "The Father of the Bureau of Mines." Whenever a mine accident was reported and men who delved under ground were imprisoned, Dr. Holmes and his crew of experts hurried to the scene of disaster, taking with them a rescue car. This car is equipped with many life-saving devices and the results achieved by it through Dr. Holmes and his assistants will be long remembered.

When news dispatches told of the death of Dr. Holmes, they gave only the cold facts of his going. They failed to tell of the many women and children in great mining sections of America who had learned to love and honor the man at the head of the Bureau of Mines.

Dr. Holmes directed his rescue work and all his other activities in a simple, kindly and quiet way. A man without ostentation, of gentlemanly bearing, and with a heart that throbbed in sympathy for suffering humanity, he gave his

time and talents and finally his life for the miners.

We believe this man of the mines has heard a voice say "Well done, good and faithful servant!"

Martyr to His Work

From the *Post*, Washington.

Joseph A. Holmes, the director of the Bureau of Mines, died a martyr to his work. He literally devoted his life to the cause of mining safety, in which he had been interested for many years. The government service has seldom included a man who took his task more earnestly or who gave himself so unselfishly to his duties. Working for years along the lines of mine safety, he was ideally equipped for the directorship of the new bureau upon its creation in 1910, and with the increased facilities afforded he had in the four years of his active work in that position invaluable supplemented his earlier endeavors to make mining in this country less destructive of human life. That mining disasters continue to occur only emphasizes the value of his accomplishments. He was striving continually toward the ideal of safe mining, studying every conceivable method for the prevention of disaster and the education of miners in safety methods. Every man who goes beneath the surface of the earth in the great organized attack upon the hidden resources of the planetary structure owes a debt of gratitude to Joseph A. Holmes, who deserves a perpetual memorial, that if shaped in accordance with his known desires will probably take the form of a research endowment for the prosecution of the task to which he gave himself.

Memorial Suggested

From the *Times*, Washington.

The miners of this country, indeed the miners of the whole world, could do no more appreciative deed, no more deserved honor, than to erect with their own money a memorial to Dr. Joseph A. Holmes, director of Federal Bureau of Mines, who has just died in Denver a victim of his overwork in their behalf. Dr. Holmes, besides being admirably fitted for his work in an educational way, brought to his position an unwearying endeavor to better the conditions surrounding the underground laborer. The inventor of the slogan, "Safety First," he made it not only popular, but effective. In his work he never sent his men into a danger which he was not willing to risk himself, and never left a threatened spot until his coworkers went with him. Even in their own ranks the miners of the world never had a better friend.

Loses Best Friend

From the *Black Diamond*.

Dr. Joseph A. Holmes, the Director of the United States Bureau of Mines, died on Tuesday July 13. The coal trade will think, and properly so, that it has lost its best friend. The metal mining industry will think, and properly so, that it has lost its best advocate. The

THE MINING CONGRESS JOURNAL

people of America will think, and properly so, that they have lost their best advocate of practical conservation.

With all partisans claiming this man as their own, the fact stands out that he boldly represented all America. He was in the broadest and best sense the public's man.

Many will try to fashion a phrase which will tell what this remarkable man meant to America. Only one paragraph properly covers that subject and it came from his own pen. He said:

"The resources which have required ages for their accumulation, to the intrinsic value or quality of which human agency has not contributed, which when once exhausted are not reproduced and for which there are no known substitutes, must serve as a basis for the future no less than the present welfare of the nation. In the highest sense, therefore, they should be regarded as property held in trust for the use of the race rather than for a single generation, and for the use of the nation rather than for the benefit of the few individuals who may hold them by rights derived from the state, the original owner."

Dr. Holmes, when he said those few simple, straightforward words, stepped out upon that broad plane which is of American statesmanship. To have been able to say that and to stand for it puts him down as one of America's great men. We will let that single paragraph stand as his eulogy, his life history and his epitaph.

Leaves Rich Legacy

From *Mining Press*.

With deep regret we record the passing of Joseph Austin Holmes, Director of the United States Bureau of Mines. This organization was created largely on his initiative and it was proper that he should have been its first administrative chief, having regard also to his fitness for its duties. He died at Denver on July 13 from a pulmonary illness that was known, among his friends, to set a definite limit to his life-work. Like Clarence King, under similar circumstances, he went first to Phoenix and then to Denver, without avail. Only 56 years of age, he had been Director of the Bureau of Mines for just five years, and a technologist on the Geological Survey for the six years preceding, during which period he had achieved honorable distinction as a clever, energetic, and persuasive official. Indeed, he combined tact with sincerity, technical ability with the humanities, energy with foresight, to such an exceptional degree as to render him peculiarly suited to direct the splendid work of the Bureau. He has set an example for those that follow. That is his legacy to his professional friends.

Important Bulletin Coming Out

A bulletin of importance will be issued this fall by the Geological Survey. It deals with the useful minerals of the United States. It was written by F. C. Schrader.

BURRO MOUNTAIN COPPER DEPOSITS TO BE STUDIED

Secondarily enriched copper deposits in the Burro Mountains of New Mexico are to be the subject of study by the United States Geological Survey this summer. The work will be in charge of Sydney Paige. A detailed map of this copper region is being prepared.

MINES IN BLACK HILLS ARE GOOD FOR LONG TERMS YET

After four years of studies of Pre Cambrian geology in the Black Hills, Sydney Paige, a geologist of the Federal Survey, has completed his report on this important mining section. It will not be ready for distribution under eighteen months.

This report will throw some light on the origin of the Homestead ore body and will discuss in detail the mines of the district.

It is Mr. Paige's conclusion that the future of the Black Hills is promising; that its mines are good for long terms, and that the ore production of the district has not reached its zenith.

Studies Cuyuna Iron

E. C. Harder is doing field geology in Cuyuna iron, and also is carrying out a study of the action of bacteria in causing the deposition of iron ores.

New Jersey Zinc Figures Out

New Jersey produced, in 1914, 144,312,560 pounds of recoverable zinc. New Jersey produces no gold, silver, copper or lead.

NEW NEVADA MINING CAMP ATTRACTS MUCH ATTENTION

One of the promising mining camps in Nevada, in the opinion of geologists, who recently have visited the locality, is the district tributary to Rochester. This is a comparatively new camp. A railway is in progress of construction from the nearest point on the Southern Pacific, which is 9 miles away. Construction work has been completed, as far as the mill and is being continued 4 miles farther to the town. An indication of the general interest that is being taken in this camp is the fact that the supply of Geological Survey bulletins covering a part of this district which were printed last year, was exhausted quickly. It was reprinted and the new supply bids fair not to last much longer. New ore bodies have been opened in several of the principal mines. Prospecting is being conducted very actively and new mills are being erected. A great advantage has been obtained by the consolidation of certain companies where the ground can be worked to the best advantage under one management.

EASTERN STATES ARE PIONEERS IN MINING GOLD, HISTORICAL SKETCH SHOWS

European Explorers Found Gold in Possession of Florida Indians in 1516—
Nugget Found in Virginia in 1482—Georgia Formerly
Produced One-fifth of United States Yellow Metal

There is much of interest to mining men throughout the country in the historical review of gold production in the eastern states, which soon is to be published by the Geological Survey. It is the work of J. P. Dunlop. A few extracts from this report follow:

"Notwithstanding the relatively small gold production from the southern Appalachian states in recent years, it is of interest to recall that the first gold mining in the United States did not take place in the western states and that prior to the discovery of gold in California the southern states had yielded over \$12,000,000.

"As early as the year 1516 a small quantity of gold is said to have been obtained by European explorers from the natives of Florida. There is, however, no record of any mining, and it is probable that the gold, which was used for ornaments, was picked up by the Indians in streams or after heavy rains and not obtained by panning or other methods involving labor or even primitive washing equipment. Even in the last few years small nuggets have been picked up by farm hands and others in localities in which no regular mining is done. Thomas Jefferson describes a lump of ore which yielded 17 pennyweights of gold, which was found on the Rappahannock in Virginia in 1782. A nugget of gold was found at the Reed mine in Cabarrus County, N. C., in 1799, but no mining was done for several years, or until about 1804. Gold was also discovered in Montgomery County soon afterward, and in Anson County in 1829. From 1804 to 1825 all the gold produced in the United States came from North Carolina and the total amount, so far as Mint records show, was only \$110,000, which was all obtained from surface placers. In 1825 gold-bearing ore in place was found in Montgomery County and soon afterward quartz veins were found in Mecklenburg County. The production from these new mines was so large that development work was extended to Guilford, Davidson, Union, Rowan, and other counties.

MADE COINS OVERWEIGHT

"The estimated production of gold in North Carolina increased from \$46,000 in 1828 to \$134,000 in 1829, and to \$475,000 in 1833. A curious bit of history affecting the accuracy of the statistics is the coinage of gold by one Bechtler in North Carolina about 1833, and for years afterward. It is said that for some time these coins and Mexican silver constituted the chief currency of large districts. To insure their reception the Bechtler coins were made slightly overweight which, of course, led to their

rapid disappearance. The largest yield recorded in any year was that of \$845,793 in 1849, and the estimated total output of gold from North Carolina to the end of 1914 is \$23,416,357, or nearly one-half of the entire yield from the southern Appalachian states.

DISCOVERED IN 1829

"In 1829 gold was discovered in Habersham County, Ga., and explorations were soon extended to Hall and Carroll counties and to the Nacoochee Valley region in White County, and the Dahlonega district in Lumpkin County. Many of the placer deposits were rich and easily worked, so that active mining followed the discoveries. The greater part of the gold output of early years was derived from placer mining and the production from Lumpkin County has probably been greater than from any other county. The period during which the most gold was recovered was between the years 1838 and 1848, when the estimated yield from Georgia was about \$3,582,000, or about one-half of the total gold output of the United States during that time. A branch of the United States Mint was established at Dahlonega in 1838, which coined \$6,115,569 in the period 1838-1861. The total gold production of Georgia for the period 1829-1914 is estimated at \$17,752,627. The yearly output has not amounted to as much as \$200,000 since 1883 and has not been as much as \$100,000 in any year since 1902.

BEGAN IN 1830

"There does not appear to be any record of the first mining in Alabama, but it probably dates from about 1830 or shortly after the gold excitement commenced in Georgia. The estimated production up to 1879 was \$365,300, and the yearly output from 1880 to 1903 varied from \$1,000 to \$8,000 a year. Unlike most of the southern states, the period of greatest production has been in recent years, or from 1904 to 1910. This was due mainly to the yield from deep mines, including the Hog Mountain in Tallapoosa County, and the Storey in Talladega County. The estimated total yield of gold from Alabama to the end of 1914 is \$749,384.

"The earliest reported discovery of gold in Maryland is mentioned in the proceedings of the American Philosophical Society, page 85, 1849, when mention is made of the occurrence of quartz veins, carrying gold, on the Samuel Ellicott farm in Montgomery County. If any mining was done, the output must have been small, for the total estimated output up to the year 1879 was only \$2,500. The total produc-

tion of gold from Maryland mines to the end of 1914 is estimated to have been \$71,339. Most of the yield has been derived from mines in Montgomery County, near Great Falls, but part of the production has come from the smelting of copper ores from Frederick County. The gold mines of Montgomery County, Md., have been described by Emmons.

"The first gold sent to the Mint from South Carolina was in the year 1829 and from mines in Chesterfield and Lancaster counties in 1830. The Brewer mine in Chesterfield County was one of the most important of the early producing properties and has probably produced several hundred thousand dollars. The gold output of South Carolina (as estimated by the United States Mint) from 1829 to 1853 amounted to \$1,085,491, and the yield only exceeded \$100,000 in one year, 1852. The Dorn mine in the Abbeville district was one of the most active and productive mines in the south in 1852 and 1853. In South Carolina, since 1890, the yield has frequently exceeded \$100,000 a year, and the greatest yield was in 1899 when the gold recovery was over \$160,000. The Haile mine in Lancaster County has yielded more gold than any other mine in the southern states. The upper oxidized portions of the ore bodies were rich and the mine has been worked more or less continuously since 1830. The gold from ore from the Haile mine was obtained by stamping and amalgamating in early years. When the upper oxidized ore bodies had been exhausted, Adolph Thies, the manager of the property, devised a method of concentration, roasting, an chlorination, by which the low-grade sulphide ore bodies were treated cheaply and efficiently. Spilsbury gives the production up to the end of 1883 as over \$1,250,000, and it has been the largest producer in the state since that year, so that its total production is probably more than \$3,000,000 out of a total of \$5,176,237, the estimated total gold production of the State of South Carolina to the end of 1914. The mine was visited and described by Graton.

"The estimated production of gold from Tennessee to the end of 1914 is \$230,217, during which period the yield has seldom exceeded \$10,000 in any one year and has frequently been only a few hundred dollars annually. Of the total, about \$155,000 was produced during the period 1831 (when the Mint has the first recorded output) to 1879. From 1880 to 1903 the annual yield of gold was usually less than \$1,000. Since 1904 practically all the gold has been obtained from the electrolytic refining of copper from the mines in Polk County. Much of the gold produced prior to 1903 or 1904 came from placer mining in Monroe County. These placer mines, however, have not reported any output for several years.

"After the date of Thomas Jefferson's note, referring to the discovery of gold in Virginia in 1799, the next discovery of gold seems to have been in 1829, when the Mint credits Virginia with a gold yield of \$2,500. Professor Silliman visited the mines, which were mainly in Goochland, Louisa and Culpepper counties, in 1836. The mines apparently were worked steadily, as the Mint estimates credit Virginia with a

yearly production varying from \$24,000 to more than \$100,000 up to the year 1853, and a production of \$3,091,700 for the period 1829 to 1879. Since 1880 the yearly output has seldom been as much as \$10,000 a year, and the gold mines in Goochland and Fluvanna counties have been operated intermittently. A considerable portion of the gold credited to Virginia since 1904 has been derived from copper ores shipped from the Cabin Branch pyrite mine in Prince William County.

"The estimated total gold output from Virginia to the end of the year 1914 is \$3,293,407.

"The total yield of gold from 1799 to the end of 1914 has been \$50,689,568, of which Alabama produced \$749,384; Georgia \$17,752,627; Maryland \$71,339; North Carolina \$23,416,257; South Carolina \$5,176,237; Tennessee \$230,217; and Virginia \$3,293,407."

DR. BAILEY WILLIS TAKES GEOLOGICAL CHAIR IN WEST

Dr. Bailey Willis, of the United States Geological Survey, has accepted a position as director of the department of geology and mining, at Leland-Stanford University, California.

The place was made vacant recently by the resignation of Dr. John C. Branner, President of the University. Dr. Branner headed the department of geology and mining for twenty-three years. He will continue as President of the University.

OIL INVESTMENTS IN THE U. S. TOTAL MORE THAN \$600,000,000

Owing to the rapid rise of the petroleum branch of the mining industry, its importance oftentimes is not realized fully. In the United States there is invested in oil well development \$600,000,000. This is being added to rapidly.

The most notable development of oil has taken place in California, but Oklahoma, Pennsylvania, Texas, Louisiana and other states are not far behind.

In California the production of petroleum is at the rate of 100,000,000 barrels per year. This means that \$50,000,000 is flowing into the coffers of the owners of these wells every year.

The gold production in California aggregates \$1,500,000,000 since 1849. Today California oil wells are producing two and one-half times as much as her gold mines.

IMMIGRATION WILL NOT INCREASE AFTER WAR, IT IS SAID

"If the people of this country are looking forward to a heavy immigration from Europe following the close of the great war, I am sure they will be greatly disappointed, and I am not making this statement on belief. It is the result of investigation," said L. P. Cotter of New York, who was in Washington last week. Mr. Cotter is representative of steamship lines which have made a specialty of encouraging emigration from Europe.

"After the war is ended," said Mr. Cotter, "each one of the nations will face the immense

task of rehabilitating its internal economies, and the first thing they will discuss is that the youth of each country has been sadly wasted. Even those who return, to some extent, will have had that spirit necessary for industrial content taken from them. This will leave the very young men and those past middle age to take up the affairs of the nation, build commerce as if it were a new venture and plan for the year to come. This will require the energy of the younger men to be applied at home, directed by the counsel of the older men."

WASHINGTON'S PRODUCTION OF METALS DECREASES SLIGHTLY

Unsettled Conditions at Republic, in Ferry County, Blamed for Falling off in Gold Output

The value of the gold, silver, copper, and lead produced in Washington in 1914, as shown by the report of C. N. Gerry, of the United States Geological Survey, was \$809,767, compared with \$1,053,135 in 1913 and \$1,120,214 in 1912.

The production of gold was valued at \$557,173, a decrease of \$139,102, due principally to the unsettled conditions at Republic in Ferry County. Only one mill was active, and the production of the Surprise, Lone Pine, Pearl, and Knob Hill mines was less than that of former years.

The output of silver decreased from 331,239 ounces, valued at \$200,068, in 1913 to 264,861 ounces, valued at \$146,468, in 1914. There was no material change in Ferry County, but the production of silver in copper ores of Stevens County was somewhat less.

Copper decreased from 954,081 pounds, valued at \$147,883 in 1913, to 778,728 pounds, valued at \$103,571 in 1914. The United Copper Company at Chewelah was idle during part of the year as a result of war prices.

Lead decreased from 202,487 pounds, valued at \$8,909, to 65,507 pounds, valued at \$2,555, in 1914. No zinc ore has been shipped since 1911.

Ore sold or treated was 95,947 tons in 1914, against 115,685 tons in 1913, a decrease of 19,738 tons, or 17 per cent. This tonnage was divided as follows: 57,834 tons of crude ore shipped to smelters, 24,533 tons treated in gold and silver mills, and 13,580 tons treated in concentration mills. There were sixty-seven producing properties, of which fifty were lode mines and seventeen were placers. The value of the output of Ferry County was \$625,173, and of Stevens County \$144,092.

ARIZONA MINERAL PRODUCTION SHOWS DECREASE IN 1914

Gold, silver, copper, lead and zinc mined in Arizona during the year 1914, amounted to \$59,956,029. This is a decrease of \$10,000,000 as compared with the output of 1913. This production came from 395 mines. Production by counties in the order of value of mineral production, is as follows:

Cochise.....	\$23,578,741
Gila.....	9,970,219
Greenlee.....	8,745,802
Pinal.....	8,177,998
Yavapai.....	5,528,565
Mohave.....	2,719,070
Maricopa.....	569,196
Santa Cruz.....	410,082
Yuma.....	64,890
Coconino.....	2,701

Production of gold, silver, copper, and lead at mines in Washington, in 1914, by counties.
(Advance figures by C. N. Gerry, U. S. Geological Survey.)

County.	Number of pro- ducers.	Ore treated.	Gold.*	Silver.*	Copper.	Lead.	Total value.
		<i>Short tons.</i>	<i>Fine ounces.</i>	<i>Fine ounces.</i>	<i>Pounds.</i>	<i>Pounds.</i>	
Chelan.....	3	264	76.19	28	104		\$1,604
Clallam.....	1		5.32	2			111
Ferry.....	17	68,084	24,829.73	163,674	159,142	5,603	625,173
Kittitas.....	11	5	212.23	71			4,426
Okanogan.....	12	720	131.77	8,039	16,081	22,391	10,182
Skamania.....	1	1		5	142		22
Snohomish.....	6	495	349.12	1,371	263	1,317	8,061
Stevens.....	11	24,536	575.37	91,480	602,996	36,196	144,092
Whatcom.....	4	1,842	756.34	188			15,739
Whitman.....	1		17.17	3			357
Total, 1914.....	67	95,947	26,953.24	264,861	778,728	65,507	809,767
1913.....	57	115,685	33,682.30	331,239	954,081	202,487	1,053,135

* Includes placer production.

MID-YEAR REPORTS OF MINERAL INDUSTRIES PLEASE

**Figures and Information Brought Up to Date
by Geological Survey—Much Data to
be Given Out on Receipt**

Evidence is at hand that one of the most popular things undertaken recently by the Geological Survey, was the issuing of current reports on mineral production at the end of the fiscal year. Many important features affecting mining were covered in these reports. They brought many of the activities in minerals right up to date. This is in pursuit of the policy of the Survey to give out all information as soon as it is received, unless it is of a confidential nature.

One of the objections to the work of the government bureaus, is that reports require so long for preparation and printing, as to make them of reduced usefulness when ready for distribution. Two years is not an uncommon length of time to transpire from the date of taking of the field notes, until the issuing of the printed report. It has been demonstrated that scientific reports of this kind cannot be handled hurriedly.

The Survey is proving, however, that many of the salient features in these reports can be given to the public almost immediately after the data have been collected.

Very wide publicity was given to the reports issued at the end of the fiscal year. Good results from this are appearing in many ways, according to the Survey, where a careful watch is maintained for evidences of public interest in its reports or where its findings have led to helpful utilization.

Due to the success of this effort the Survey intends to make an effort to place more and more information in the hands of the public as soon as it becomes available.

Much of the information for the fiscal year reports was obtained by telegraph. The figures on production of many of the minerals, covered the output of the more important properties, to within a few days of the end of the fiscal year.

These reports were widely circulated and before this time have appeared in the technical and daily press throughout the country.

The importance attached to these reports may be judged from the amount of space given them by the financial press. *Financial America*, for instance, thought enough of this material to use it on its first page as one of its leading articles. More than two columns of the matter were used.

In its editorial columns, this very prominent financial journal declared that "the mid-year reports are an innovation which is as welcome as it is useful. Continuing, it comments very complimentarily upon the general idea of getting out Government information while it is news, and before it becomes useless for any other purpose than embodiment in a history.

GOVERNMENT WILL COMPENSATE THOSE INJURED ON ITS RAILROAD

**Workers in Alaska to Have the Benefit of
Identical Protection Given Employees
on the Panama Canal**

President Wilson has approved an order, prepared by Secretary Lane, of the Department of the Interior, putting into effect "a system of compensation for accidents which may occur on the work of constructing railways in Alaska."

The order, in effect, is a supplement to the Executive Order of April 10, 1915, which established the route and termini of the Government railroad in Alaska, and by which Secretary Lane was authorized to prepare and adopt a system of compensation for employees who might be injured or incapacitated in the line of their duties in the work of Alaskan railway construction. Attorney General Gregory held that the order was legal and proper.

The system adopted by Secretary Lane, which goes into effect at once and continues in force until further orders, is an extension of the act governing the Panama Canal, the Reclamation Service, and the Bureau of Mines, and provides as follows:

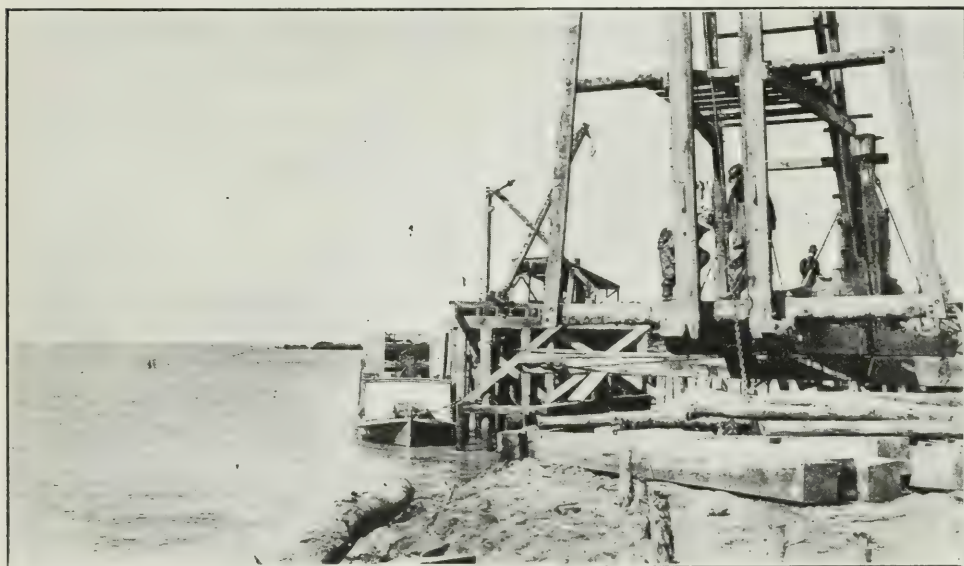
"Employees of the Alaskan Engineering Commission shall have the right to receive compensation for injuries sustained in the course of their employment while actually in the Territory of Alaska at the rates and in the amounts and on the conditions provided in the act entitled 'An act granting to certain employees of the United States the right to receive from it compensation for injuries sustained in the course of their employment,' approved May 30, 1908. Claims for compensation account of injury or death resulting from an accident thus occurring hereafter shall be settled by the Chairman of the Alaskan Engineering Commission, who shall as to all such claims, and under such regulations as he may prescribe, perform the duties which under said act are placed upon the Secretary of Commerce and Labor, provided that when an injury results in death claims for compensation on account thereof shall be filed with him within one year after such death."

Secretary Lane also directs that the Alaskan Engineering Commission shall make no charge for the service of its medical or surgical officers rendered to an employee thus injured in Alaska or to any person who, while under contract with the Commission, is injured in Alaska in the course of the Government's railway construction. This provision covers possible injuries to "station men," who perform work under contract. The order further provides that "in case such injury of such person not an employee be such that the Chairman of the Commission shall deem it beneficial that he shall be conveyed to any other point in Alaska or to the city of Seattle for medical or surgical treatment not available at the place where such injury occurs," the Commission shall pay the patient's transportation.

NEW PICTURES FROM ALASKA



LATEST PHOTOGRAPH OF BEAVER ON THE YUKON RIVER



TEMPORARY LANDING MADE FOR USE IN CONNECTION WITH CONSTRUCTION ON THE GOVERNMENT RAILROAD—STERN-WHEELER CHULITNA IS TIED UP AT THE DOCK

BUREAU OF MINES DEMONSTRATES ITS ABILITY TO PRODUCE RADIUM CHEAPLY

The Secretary of the Interior, in a Formal Statement, Tells of Successful Work Done at Colorado Mines and Laboratory—Gram of Metal Costs \$36,050 to Produce

Radium production in Colorado has been reduced to a successful manufacturing basis, according to a formal statement given out recently by the Secretary of the Interior. Mr. Lane declared that the value of radium in treating cancer is being recognized by increasing numbers of physicians.

Mr. Lane states that the production of radium from Colorado carnotite ores by the Bureau of Mines, in connection with the National Radium Institute has passed the experimental stage in its new process and is now on a successful manufacturing basis. He also declared that the statements made to Congress concerning the ability of the Bureau of Mines to produce radium at a greatly decreased cost over other processes actually had been accomplished and that the costs were even less than predicted.

COST IS \$36,050

"The cost of one gram of radium metal produced in the form of bromide during March, April and May of the present year was \$36,050, I am informed by Dr. Charles L. Parsons, in charge of the radium investigations of the bureau," the secretary said. "This includes the cost of ore, insurance, repairs, amortization allowance for plant and equipment, cost of Bureau of Mines cooperation, and all expenses incident to the production of high grade radium bromide. When you consider that radium has been selling for \$120,000 and \$160,000 a gram, you will see just what the Bureau of Mines has accomplished along these lines.

"The cost of producing radium in the small experimental plant during the first few months of the Bureau's activities was somewhat higher but not enough to effect seriously the final average.

"The public, however, should not infer that this low cost of production necessarily means an immediate drop in the selling price of radium. The National Radium Institute was fortunate in securing through the Crucible Steel Company the right to mine ten claims of carnotite ores belonging to them and this was practically the only ore available at the time. Since then new deposits have been opened but these are closely held and according to the best judgment of the experts employed by the Bureau of Mines the Colorado and Utah fields, which are much richer in radium bearing ores than any others known, will supply ore for a few years only at the rate of production that obtained when the European war closed down the mines.

DEMAND WILL INCREASE

"The demand for radium will also increase rapidly, for the two or three surgeons who have a

sufficient amount of this element to entitle them to speak from experience are obtaining results in the cure of cancer that are increasingly encouraging as their knowledge of its application improves. A few more reports like that presented to the American Medical Association at its recent San Francisco meeting and the medical profession as a whole will be convinced of its efficacy. Under all the circumstances that have come to my knowledge it does seem to me that it behooves the Government to make some arrangement whereby these deposits, so unique in their extent and their richness, may be conserved in the truest sense for our people, by extracting the radium from the ores where it now lies useless and putting it to work for the eradication of cancer in the hospitals of the Army and Navy and the Public Health Service.

"The ten carnotite claims being operated at Long Park, Colorado, by the National Radium Institute already have produced over 796 tons of ore averaging about 2 per cent. uranium oxide. The cost of ore delivered at the radium plant in Denver has averaged \$81.30 per ton. This included 15 per cent. royalty, salary of Bureau of Mines employes, amortization of camp and equipment and all expenses incident to the mining, transportation, grinding and sampling of the ore.

SIZE OF PLANT DOUBLED

"A concentrating plant for low grade ores has been erected at the mines and is successfully recovering material formerly wasted. Grinding and sampling machinery has been installed at Denver and a radium extraction plant erected in the same city. The radium plant has now a capacity of 3 tons of ore per day, having been more than doubled in size since last February. Before that time the plant had been run more or less on an experimental scale although regularly producing radium since June, 1914. To July 1, slightly over 3 grams of radium metal had been obtained in the form of radium barium sulphate containing over 1 milligram of radium to the kilogram of sulphates. The conversion of the sulphates into chlorides and the purification of the radium therefrom is easily accomplished and with very small loss of material. Unfortunately, however, special acid proof enamel ware, obtainable only in France, has not been delivered of sufficient capacity to handle the crystallization of the full plant production, so that a little less than half the output, or to be exact, 1,304 milligrams of radium element have been delivered to the two hospitals connected with the National Radium Institute. The radium remaining can be crystallized at any time from neutral solution in apparatus already installed, but the greater

rapidity and efficiency of production of this very valuable material by the methods used have decided the Bureau of Mines to await the completion of apparatus now being built before pushing the chloride crystallization to full capacity.

"The average radium extraction of all ore mined by the National Radium Institute has been over 85 per cent. of the amount present in the ore as determined by actual measurement. The amount present in the ore has been found in fact to be essentially the same as the theoretical amount required by the uranium-radium ratio. The extraction figures for the last five carloads of carnotite treated has shown a recovery of over 90 per cent. in each case.

"A bulletin giving details of mining, concentration and methods of extraction is being prepared by the Bureau of Mines and will be issued early in the fall."

This interview is an effective and complete answer to an article by Warren F. Bleeker, in the March issue of *Metallurgical and Chemical Engineering*, as well as an article by Charles H. Viol in the March number of *Radium*. Each of these articles attacks the Bureau of Mines and discredits its activities.

TENNESSEE'S ZINC PRODUCTION SHOWS DECIDED INCREASE

Tennessee's production of gold and silver, as shown by statistics, has just been made public by the Geological Survey. The gold and silver are produced entirely in refining copper, in the Ducktown district. One of the features of 1914 was the large increase in the amount of zinc produced in Tennessee. The American Zinc Company, as well as other concerns, has been very active in the zinc production in the eastern part of the State.

VANADIUM DOES NOT OCCUR IN PARTICULAR TYPE OF ROCK

Interesting information in regard to vanadium has been furnished, upon request, by the Geological Survey, and is as follows:

Vanadium occurs in Colorado in two forms; in the vanadium mica rescoelite which in minute flakes impregnates a fine-grained sandstone to which it gives a sage green color; and in carnotite, a canary yellow hydrous potassium uranium vanadate, which is also found in sandstones. At Minas Ragras, Peru, where the largest known deposits of vanadium occur, the vanadium is apparently in the form of a sulphide in an aspatite vein. The sulphide is known as patronite.

In Spain and the southwestern United States, vanadium occurs as vanadinite—a lead-chlor-vanadate in quartz veins cutting various rocks. These are the principal types of vanadium deposits. Vanadinite, so far as is known to the Survey, occurs in large quantities, mostly in arid and semiarid regions. Vanadium-bearing sandstone has been found in large quantity nowhere except in Colorado and Utah. Some asphaltites carry small quantities of vanadium, but none—unless the vein

at Minas Ragras be so considered—are known to carry enough vanadium to make them commercially valuable for that metal.

It is not safe to say that vanadium is found in any particular type of rocks, although in any one region it would be well to look for vanadium under conditions similar to those in which it is known to occur in other parts of the same area. The largest use of vanadium is as an alloy in steel, for which purpose it is made into ferrovanadium, an alloy of vanadium and iron. As ordinarily made, this alloy contains from 20 to 50 per cent. of vanadium. Ferrovanadium now sells, in large lots, at from \$1.90 to \$2.50 a pound for the contained vanadium.

GOLD PRODUCTION OF EAST SURPRISES NEW YORK PAPER

Commenting on the gold production of the eastern states, the *New York Sun*, in its issue of July 19, says editorially:

"What often makes the Government publications entertaining is the surprises they contain. Who, for instance, knew that here in the eastern states were forty-five gold placer mines and thirty-six deep gold mines, that the yield from these mines was \$173,589 in 1914, and that this production was an increase over the preceding year. Yet that is the report in the current bulletin of the United States Geological Survey.

"North Carolina easily ranks first in the output of this valuable metal, more than 6,000 fine ounces, worth \$131,141. The largest of this state's placer mines is in the mountainous county of Rutherford, and the most profitable deep mines are along the Gadkin in Montgomery County. The production in Alabama was contributed by mines in fourteen counties, of which Lumpkin, one of the rugged northern counties, furnished the greatest output. Two eastern counties of Alabama, Talladega and Tallapoosa, furnished this state's largest and more valuable output.

"The Tennessee mines yielded more than \$6,000 worth of gold, less by \$1,000 than they did the year before. There was a decrease also in Virginia, and the output from Maryland was scarcely worth reporting. The Pennsylvania gold mines have not been worked for many years, and none of the New Hampshire mines reported any production last year.

"Some operators profess to see still greater possibilities in gold mining in the South Atlantic states and to believe that there will yet be uncovered a great wealth of the precious mineral in the mountains of Georgia or North Carolina. Whether these dreams of a new Eldorado come true or not, gold seekers find present mines, although their output is less than a hundredth of the production of California, profitable to work."

Oregon Uses Less Coal

Oregon in 1914, produced 51,558 tons of coal. This came from the only operating field in the State, which is known as the Coos Bay field.

Owing to the large production of petroleum in California, coal is becoming of less importance in Oregon, through the extensive use of oil fuel.

BUREAU OF MINES COOPERATIVE WORK WITH STATES PROVING SUCCESSFUL

California So Pleased with Results That Additional Men Probably Will Be Put on Work in That State—Utah Work is Benefiting Idaho and Colorado

Cooperation between the Bureau of Mines and the Industrial Accident Commission of California will be continued during the next fiscal year. This cooperation has been very successful during the past year and a half. The bureau furnishes a mining engineer to make investigations of safety and health conditions within the state. Half of the expense is paid by California. H. M. Wolfen is the engineer in charge of this work.

It is proposed to assign two additional engineers to this work, upon the same basis. California is impressed with the results that are being obtained, and is very willing to bear her share of the expense. The bureau also is gratified at the success of the cooperative work, but is hampered by lack of funds. It is probable, however, that means will be found whereby two additional engineers may enter the work.

TO GET UP SAFETY CODE

It is the intention to compile a safety code. Despite the fact that California was the first state in the Union to undertake mining on an extensive scale, this will be her first code of this kind. Later it is intended to get up a health code.

Cooperation also is taking place between the Bureau of Mines and the State of Illinois. Mining and safety problems peculiar to that State are being studied. A joint expenditure of \$20,000 is being made.

Investigation of the coking qualities of Illinois coal; the occurrence of gas in mines; mine ventilation; explosibility of Illinois coal dust and humidity of mine air are some of the questions under investigation.

The work is being directed by George S. Rice, representing the Bureau of Mines, Prof. A. A. Stoeck, University of Illinois, and Dr. F. G. DeWolf, State Geologist.

SUCCESSFUL IN UTAH

In Utah cooperation between the Bureau of Mines and the Utah School of Mines was very successful last year, and will be continued this year. D. A. Lyons is conducting an investigation into the possibility of utilizing low grade gold, silver, copper and zinc ores in Utah.

Owing to the similarity of these ores with those which occur in Colorado and Idaho, these states will benefit decidedly from this work.

In Pennsylvania a joint investigation is being conducted by the Bureau of Mines and the Bureau of Labor and Industry of that state. The study of the health of employees in blast furnace work will be continued. This investigation was begun a year ago.

The Missouri Geological Survey is cooperating with the Bureau of Mines in the matter of investigating milling losses in the treatment of zinc and lead. Sanitation and health features also are being given attention.

NEW MEXICO DEPOSITS OF ZINC ARE BEING STUDIED

G. F. Loughlin, of the Geological Survey, is in the Magdalena District of New Mexico, making a preliminary examination of the zinc deposits of that region.

WORK IS PROGRESSING ON IDAHO STATE REPORT

D. L. Jones has completed field work in the Conully region of Washington and will join J. B. Umpleby in a reconnaissance of southwestern Idaho. Owyhee, Elmore and Boise Counties in the Seven Devils and Warren Districts are to be studied thoroughly from a standpoint of geology and ore deposits. This work is being done to complete the report on the entire State of Idaho, which will be the subject of a general report such as the one recently published on New Mexico.

USE MICROSCOPE IN STUDY OF TONAPAH ORE SAMPLES

E. S. Bastin is conducting an extensive microscopic examination of Tonapah ore in San Francisco. He is being assisted by F. B. Laney.

FIELD MEETS INTEREST

Birmingham District Has Twenty-eight Negro First Aid Teams.

Increasing interest is reported in the various parts of the country in first aid field meets. The greatest interest is being shown on the part of the employees.

The largest meet of this kind was held recently in Birmingham, Alabama, where eighty teams participated. Twenty-seven of the teams were composed of negroes.

This meet was held under the auspices of the Alabama Safety Association, Bureau of Mines, American Red Cross and the Alabama Coal and Metal Miners' Association.

UTAH'S MINERAL OUTPUT**FOR 1914 WAS \$37,151,593****Salt Lake County Has Greatly Increased****Output of Gold—Bingham Copper****Holds Up Well**

Mines in Utah produced ore and bullion during 1914 containing gold, silver, copper, lead, and zinc valued at \$37,151,593; as against \$44,858,210 in 1913, or a decrease of \$7,706,617, according to Victor C. Heikes, of the United States Geological Survey.

The gold output was valued at \$3,265,347, a decrease of \$299,882, or 8.41 per cent., compared with 1913. Salt Lake County was the largest producer and had a greatly increased output of gold valued at \$2,159,500, against \$1,777,214 in 1913. Most of the gold was from the copper ores in the West Mountain or Bingham district, in Salt Lake County, the yield amounting to \$2,151,520, or 65.89 per cent. of the total output. The Tintic district, in Juab and Utah Counties, ranked second with \$953,790, or 29.21 per cent. of the total; Summit County \$84,001 in 1914 and \$74,242 in 1913. Tooele County, which was once the leading producer in gold, dropped to \$16,468 in 1914.

SILVER SHOWS DECREASE

Silver from ores in Utah shows a decrease from 13,084,835 ounces in 1913 to 11,154,916 ounces, value \$6,168,669, in 1914, or 14.75 per cent. Juab County produced 4,444,996 ounces in 1914, against 5,600,617 ounces in 1913; and Utah County 264,532 ounces in 1914, against 265,850 ounces in 1913. Tintic district, comprising the larger part of the productive mineral area of these two counties, decreased from 5,829,484 ounces in 1913 to 4,666,944 ounces in 1914. Salt Lake County produced 2,629,153 ounces, against 2,504,021 ounces in 1913. The larger part of the 1914 production, or 2,383,051 ounces, was from the ores of the West Mountain or Bingham district. From the Park City region the yield in 1914 was 2,955,008 ounces, a decrease of 762,548 ounces, or about 20.51 per cent. from that of 1913.

From a record copper production of 161,445,962 pounds in 1913, the output decreased to 152,034,002, value \$20,220,522, pounds in 1914. The Bingham district led in production, with 141,924,811 pounds of copper, against 144,920,494 pounds in 1913, 116,621,793 pounds in 1912, and 129,995,865 pounds in 1911. The Tintic district yielded 5,290,471 pounds in 1914, against 9,261,867 pounds in 1913 and 13,339,126 pounds in 1912. The Park City region, in Summit and Wasatch Counties, produced 1,559,953 pounds in 1914, against 1,794,170 pounds in 1913 and 1,968,249 pounds in 1912. Beaver County yielded 1,511,888 pounds in 1914, against 3,137,234 pounds in 1913 and 3,040,400 pounds in 1912. There were three producers in 1914 classed as "porphyry coppers," which yielded 126,082,239 pounds of copper, against the same

number producing in 1913 when the yield was slightly greater or 126,364,491 pounds of copper, against 102,662,335 pounds in 1912.

LEAD INCREASES

The lead contained in Utah ores produced in 1914 was 171,323,137 pounds, value \$6,681,602, against 166,126,790 pounds in 1913 and 140,311,135 pounds in 1912. Of the 1914 output, 44.63 per cent. was derived from the mines in the Bingham district, which produced 76,453,128 pounds, against 71,001,138 pounds in 1913 and 43,822,495 pounds in 1912. The Park City region produced 32,323,066 pounds in 1914, against 41,808,713 pounds in 1913, or 18.87 per cent. of the total output. The Tintic district mines yielded 36,510,911 pounds in 1914, 26,279,312 pounds in 1913, and 24,356,041 pounds in 1912.

BEAVER COUNTY BREAKS RECORD

The zinc production of Utah (figures as spelter) aggregated 15,989,267 pounds in 1914, value \$815,453, against 18,857,827 pounds in 1913. Beaver County again eclipsed all previous records by yielding 7,143,746 pounds, against 5,522,324 pounds in 1913, and led all mining districts in 1914. Bingham district was second, yielding 4,121,977 pounds in 1914, against 3,421,724 pounds in 1913 and 2,711,982 pounds in 1912, and the mines in the Park City region yielded 3,173,313 pounds in 1914, against 4,980,206 pounds in 1913 and 8,001,512 pounds in 1912. Tooele County produced less zinc on account of the idleness of the Scranton mine. Mines in the Ophir, Rush Valley, and North Tintic districts yielded 752,097 pounds of spelter in 1914, against 1,202,568 pounds in 1913. In 1914 the larger part of the zinc was contained in sulphide ore, principally lead-zinc ore, which was concentrated. The smaller part was from zinc ore and lead zinc ore and was shipped directly to zinc smelters. The shipments of crude zinc ore and lead zinc ore resulted in 7,103,646 pounds of spelter and the concentrates produced 8,885,621 pounds.

PRODUCING MINES LESS

There were 204 producers of ore, against 210 producers in 1913. There were also 7 placers in 1914. The total quantity of ore sold or treated in 1914 was 8,544,014 short tons, against 10,202,566 tons in 1913. The average total recoverable value per ton was \$4.35 in 1914, against \$4.39 in 1913.

The output of "porphyry" copper ores aggregated 7,107,506 tons in 1914, against 8,406,816 tons in 1913. The quantity of siliceous ores treated by the cyanide process decreased from 74,815 tons in 1913 to 1,613 tons in 1914. Concentrating mills reduced 7,523,339 tons of ore to 500,458 tons of concentrates, which, with 910,308 tons of crude ore, were sent to smelters. Salt Lake County continues to produce the largest part, or 69.52 per cent., of the total output by value, chiefly from its copper, having furnished 93.50 per cent. of the total production of that metal and 91.45 per cent. of the total tonnage of ore treated.

OPPORTUNITIES ARE MANY FOR DEVELOPMENT OF SOUTHERN GOLD DEPOSITS

Attitude of Owners of Land Discourages Newcomers and Makes Prospecting Almost Impossible—South Carolina Company to Make Barium Chemicals and Produce Ground Barites

Information reaching the United States Geological Survey from southern placer districts tends to the belief that intelligent development of many of the low grade propositions in that section of the country will result profitably. Under present conditions, however, the chances for increased development are not great. Development work is hampered and prospecting is almost prohibited, due to the attitude of owners of the lands on which these gold deposits exist.

Reports just received from these placer districts indicate that very little work is being done in the Arbacoochee mines in Clayton County, Ala. The stream gravels have been worked out with the exception of the deep ground. Two attempts at dredging have been undertaken recently, but each failed. It is probable that 8 to 16 feet of dirt could be worked with hope of success, before reaching bed rock.

OPERATING ON SMALL SCALE

The placer mines at Dahlonga, Ga., are operating on a limited scale. The most active properties are at Little Findley and Crown Mountain. These are being worked under the direction of Charles Sumner.

Barlow Cut is the scene of some activity and some leasing has been done in the saprolite deposits east of Barlow Cut.

The dredge formerly working below the Calhoun dam, has been moved to new ground east of Briar Patch bridge. This work is under the direction of R. L. Herrick. The saprolite runs from 45 cents to \$1.00 per cubic yard, and is being mined hydraulically.

At Loud, in White County, work is being done on the gold deposits in a small way.

Most of the work in the South Mountains, in Burke, Rutherford and McDowell Counties, North Carolina, has been discontinued.

The old Mills property is still in operation. Miss Mary Mills is continuing this work at Brindle Creek.

At Sulter White Creek, some work is being done of the gold bearing gravel and on the old channel in Golden Valley. W. E. Ludlow is working there.

LOSE MARKET

Nothing is being done at present with the monazite and zircon sands. Demand for zircon seems to have ceased, while all thorium metal is being brought from Brazil.

Sinking is continuing in the gold mines in Montgomery County, North Carolina. The shaft is something over 350 feet deep. A new ten stamp mill has been erected. It is equipped with four amalgamating plates and two Wiltley tables.

At King's Creek, Cherokee County, South Carolina, barite deposits are being operated by the King's Creek Chemical Company. This company is producing ground barites and is reported to be preparing to make barium chemicals. Prospecting is being continued southwest of King's Mountain.

COLORADO'S GOLD OUTPUT IN

1914 WAS NEARLY \$20,000,000

The output of Colorado mines during 1914, according to figures compiled by Charles W. Henderson, of the United States Geological Survey, was \$19,883,105 in gold, 8,796,065 ounces of silver, 74,211,898 pounds of lead, 6,639,173 pounds of copper, and 96,774,954 pounds of zinc (in terms of spelter and zinc in zinc oxide), with a total value of \$33,460,126, compared with \$18,146,916 in gold, 9,325,255 ounces of silver, 87,897,773 pounds of lead, 7,227,826 pounds of copper, and 119,346,429 pounds of zinc, with a total value of \$35,450,585 in 1913. This shows an increase of \$1,736,189 in gold, and decreases of 529,190 ounces in silver, 13,685,875 pounds in lead, 588,653 pounds in copper, and 22,571,465 pounds in zinc. In addition to the decrease in quantities of silver and the base metals, the falling off in average value for these metals caused a decrease in value of \$768,230 for silver, \$973,238 for lead, and \$1,747,877 for zinc.

In 1914, there were sold or treated 2,677,526 short tons (mostly dry weight) of ore mined in Colorado, a decrease of 57,340 tons from the output of 1913. Of this total, 1,645,640 short tons (mostly dry weight) went to gold and silver mills, 363,743 tons (mostly dry weight) went to mills for concentration only, and 668,143 dry tons went crude to smelters; 188,770 dry tons of concentrates also went to smelters.

In all, 114,860 dry tons of zinc carbonate ore averaging 24.34 per cent. zinc, were sold at the mines in 1914, as compared with 137,240 tons of 27.5 per cent. zinc in 1913, and 136,705 tons of crude zinc and zinc-lead ore, concentrates, and middlings, averaging 25 per cent., were sold at the mines during 1914, as compared with 134,457 tons of 27 per cent. in 1913.

COAL PRODUCTION WILL BE

LESS THIS YEAR THAN IN 1914

From facts and figures in hand at Washington, it is very doubtful if the 1915 production of coal in the United States proper can equal the 1914 production. Owing to the bad start this year, it is probable that the exports, now rapidly increasing, will not overcome the decrease.

GOLD PRODUCTION IN ALASKA IS RUNNING CONSIDERABLY ABOVE AVERAGE

**Copper Properties Are Being Worked With Greatest Activity—Good Rainfall in June and July Made Extensive Sluicing Operations Possible—
Five-sixths of Precious Metal Comes From Small Operations**

Alaskan gold production during the six months ended June 30 promised to show a considerable increase over the same period of last year. There will be a very decided increase in the copper output, according to the belief of Government experts. Actual figures for the production of the first six months of 1915, of course, are not available, but estimates are made on the various reports which have been received.

A. H. Brooks, who is in charge of the Geological Survey's work in Alaska, has arrived in Alaska, and will visit Valdez, Fairbanks, Iditarod, and Ketchikan.

The actual output of gold for 1914 from Alaska just has been ascertained. It is practically the same as that of 1913. Since the first of the year, however, there has been much increased activity in the mining of copper and gold. This is especially true of copper. During 1914 a large number of the copper properties closed owing to the low price of the red metal.

COPPER MINES ACTIVE

This all has been changed by the rapid increase in the price of copper. All producing mines are straining every effort to increase their shipments, fearing a decrease of price, if peace should be declared.

In the production of gold, the development has proceeded steadily but during 1915 a number of lode propositions have reached the shipping stage. A few more dredges have been installed. April and May were good months for sluicing.

In Alaska there are 700 placer mines. Five-sixths of these are comparatively small operations. These properties are affected very decidedly by the amount of water available for sluicing. If the season is unusually dry, a decided reduction in gold production results from their inability to secure water.

RAIN HEAVIEST IN AUGUST

The most important portion of the 1915 season, of course, is during June, July and August. During June and July the normal rain fall is small, but reports from Alaska indicate that the rain fall has been more copious than usual. In August there usually is a heavy rain fall—in fact, the heaviest of the year invariably takes place during this

month. For these reasons, it is expected that the 1915 production of gold in Alaska will be considerably in excess of the 1914 production.

One of the most interesting mining districts is the Koyukuk, a placer region which is north to the Arctic Circle. It has been in operation for seventeen years, but continues to produce profitably, despite the high cost of transportation and operation. No outside capital is being employed in this district. It is being operated in the old-fashioned way.

FIND LARGE NUGGET

One of the largest nuggets found in Alaska recently was discovered in the Koyukuk District. It weighs 137 ounces, and is valued at \$1,800. The largest nugget ever found in Alaska was worth \$3,000. It was discovered twelve years ago at Nome.

Miners in the Fairbanks District are rejoicing over the certainty of rail transportation. For the past several years, operations have been handicapped greatly in this region, due to the high cost of fuel, and the serious delays in getting supplies. In the early days before the richer deposits were worked out, it was possible to stand the high cost and still make a profit. This day has passed in Fairbanks, and it will be necessary in the future to rely upon the low-grade deposits for gold production.

BUREAU OF MINES MOVING PICTURES EXCITE WIDESPREAD INTEREST

Miners throughout the West Virginia and Pennsylvania fields, which have been traversed by the Bureau of Mines car carrying a moving pictures machine, have shown the greatest interest in the instructive films shown. The pictures deal with subjects showing the need for greater safety in mining. Features as to fire prevention, first aid, and mine rescue work also are brought out.

COMPLETES REPORT ON SANTA RITA, N. MEX. QUADRANGLE

A detailed report on the geology and ore occurrence in the Santa Rita quadrangle of New Mexico, just has been completed by A. C. Spencer, of the Geological Survey. The report cannot be published within a year.

ARIZONA BILL PROVIDES FOR ESTABLISHMENT OF STATE HOSPITAL FOR MINERS

Department of Labor Also Provided to Work in Interest of Wage Earners—Statistics and General Information Will be Collected and Classified

Arizona

A bill providing for the establishment of a state hospital for disabled miners recently passed the House of Representatives. The bill provides for a commission to select the site of the hospital and for a board of trustees who shall conduct it.

The bill provides \$75,000 for the purchase of the site and erection of such buildings as may be deemed essential. It is made lawful for the trustees of the hospital to receive contributions, donations or bequests from any person, firm or corporation, to aid in the support, maintenance or improvements of the hospital.

MUST HAVE OCCUPATIONAL DISEASE

To be eligible to become a free inmate of the miner's hospital, it is necessary for the applicant to be suffering from occupational diseases peculiar to the mining industry, contracted while employed in the industry in Arizona.

It is provided that to be eligible for attention without charge applicant must be a citizen of the United States. The applicant must not have real or personal property in excess of \$1,000.

Any person injured in Arizona mines, so as to require surgical and medical treatment, may be admitted to the miner's hospital. Employers receiving fees from their men to cover accident expenses must make payment for each of their employees treated in the state institution. It is lawful for an employer to collect a hospital fee, which does not exceed $\frac{1}{4}$ per cent. of the salary of the employee. No fee may be collected without the consent of the employee. In case the employee refuses to have this reduction made from his wage, he is not eligible for free admission to the hospital. Burials will be made from the hospital at state expense where inmates are not provided with means.

MAY BRING SUIT

In the event of any miner receiving injuries which make him eligible to the hospital, and at the same time give him a legitimate claim for damages, the trustees may cause suit to be brought in order to secure for the inmate the damages due him. From this award all expenses of litigation and treatment are to be deducted.

Upon a petition signed by 25 per cent. of the miners in Arizona, requesting the removal of one or more of the trustees, the governor shall arrange hearings. The governor is empowered to remove the trustees for cause.

New Land Code

Arizona's new public land code contains points of interest to mining. Extracts from it are as follows:

RESERVATION OF OILS

Leases shall expressly except and reserve to the State all oils, gases, coal, ores, minerals, fertilizer and fossils of every name, kind and description which may be in or upon the land, and any legal claim or claims existing or that may be established under the mineral land laws of the United States, or the State of Arizona, and shall reserve to the State and its agents or assigns the right to go upon the land for the purpose of extracting therefrom or prospecting for such oils, coal, ores, minerals, fertilizer or fossils, and shall further reserve the right to relinquish to the United States such lands as may be needed for irrigation works, in connection with any Government reclamation project, and to grant or dispose of rights of way and site for canals, reservoirs, dams, power or irrigating plants, or works, railroads, tramways, transmission lines or any other purpose or use on or over such land.

LEASES AND CONTRACTS

The department is authorized to execute leases and contracts for the leasing of lands containing gold, silver, copper, lead or other valuable minerals, or for any land containing shale, slate, petroleum, natural gas, or other valuable natural deposits which the State now owns or to which it may hereafter acquire title.

Any citizen of the United States finding valuable minerals upon any unsold lands of the State may apply to the department for a lease of any amount of land not to exceed the amount and dimensions allowed by the mining laws of the State and the United States.

The manner of locating a mineral claim upon State land shall be in accordance with the law of the State regulating the location of mineral claims on Government lands; provided, that any citizen or citizens who may have found minerals or unsold State lands previous to the passage of this act and posted notices in accordance with the mining laws of the State, and the United States, shall have preference right to lease the same, and shall have ninety days after the passage of this act in which to make application to the department for such lease.

PROVISIONS OF LEASE

For the purpose of developing such mine or mines, the applicant shall, upon the payment of \$5 per claim, receive from the department a lease for two years; provided, however, that no more than 50 tons of ore shall be

removed from the premises for any purposes until a contract shall have been executed, as hereinafter provided.

The lessee may cut and use the timber found upon said claim for fuel, and in the construction of buildings required in the operation of any mine or mines, on the claim; also the timber necessary for drains, tramways, and supports for such mine or mines, but for no other purpose.

Any time prior to the expiration of said lease, the lease-holder or any assignee thereof shall have the right to obtain from said department a contract, which shall bind the State of Arizona, as a part of the first part, and the person, or persons, or corporation, to whom said contract shall issue as part of the second part, in a mutual observance of such obligations, terms, and conditions as may be agreed upon by said department and the said lessee.

PENALTIES

Whenever any lessee of mining property shall be convicted of fraud or wilful misrepresentation in connection with the procuring of any such lease, or the handling or shipping of ores or other dealing with the product or proceeds of any property leased under the provisions of this act, the penalty shall be the forfeiture of the lease to any such mine or mining claim, and all improvements placed thereon, or used in connection therewith, and all property pertaining thereto and all moneys paid thereon and all rights, title or claim to any and all of said property shall be vested in the State without further or other procedure on the part of the State.

TAXATION OF IMPROVEMENTS

All improvements placed upon State lands shall, until they become the property of the State, be subject to assessment for taxes, in the name of the owner, the same as other property.

ASSIGNMENTS OF LEASE

Any lessee of State lands not in default as to any rent, and who has kept and performed all the conditions of his lease, may, only with the written consent of the commissioner, assign his right, title and interest under such lease.

Department of Labor

House Bill 16, by John J. Sweeney. This bill provides for the creation of a department of labor, prescribing the duties, powers, qualifications and wages of the commissioner of labor and employees of his department.

It provides for a board of arbitration to act in conjunction with the commissioner of labor in certain instances.

The first commissioner of labor is to be appointed by the Governor, with the consent of the Senate. He shall hold office until a successor shall have been selected at the next general election. The term of office is two years.

The commissioner of labor must be a qualified elector of the State and must have been a resident for five years prior to election. He must have been engaged in some of the trades or industrial pursuits for a period of not less than five years preceding his election.

The commissioner of labor is to receive a salary of \$3,000 per year, and \$2,000 for traveling and other expenses.

A deputy is to be appointed, possessing the same qualifications as the commissioner. He must be a stenographer, and is to receive \$1,500 per year.

The commissioner must file a bond of \$5,000 and the deputy commissioner a bond of \$2,500.

TO GATHER STATISTICS

Statistical details relating to all departments of labor and industrial endeavor in the State are to be collected and published annually, by the commissioner. These statistics must contain, among other things, hours and wages of labor; estimated number of persons, male and female, depending upon daily labor for their support; cost of living; unemployment; operation of labor-saving machinery; production and accidents.

The commissioner of labor is empowered to enter any factory, mine smelter or other place in which work is conducted.

To impede the commissioner in the discharge of his duties is penalized by a fine of \$250, six months' imprisonment, or both.

MAY SUMMON WITNESSES

The commissioner has the power to compel attendance before him for examination under oath. He is instructed to make immediate investigation of all labor disputes. He is to act as first arbitrator in strikes.

A board of arbitration, consisting of the commissioner and two men, is provided for service in times of labor controversies. One of the men is to be an employee in good standing with a labor organization. The other is to be selected by the employer. The commissioner is to be chairman of this board. Recommendations must be submitted fifteen days after the completion of the hearing.

An appropriation of \$5,500 is provided annually to carry out the provisions of the act.

Takes Semi-Vacation

H. D. McCaskey, chief of the mineral resources division of the Geological Survey, spent a portion of July at Wallops Island Club House, at Chincoteague, Virginia. Mr. McCaskey did not feel he could spare the time to take a vacation outright, so he is working upon a quicksilver report while away.

Distills Oil Shale

Field distillation tests of oil shales in northwest Colorado and southwest Wyoming, are progressing nicely, D. E. Winchester reports.

PROSPECTS FOR AMERICAN TIN BRIGHTEN AS WAR IS PROLONGED

Another Effort to Operate South Dakota Deposits is Being Made—English Smelter to be Erected in U. S. to Treat Bolivian Ore—Alaskan Properties Look Up.

Another effort to operate the tin mines west of Hill City, South Dakota, is being made. Henry Kammal has taken over the property and is engaged in development work. He also is building a new mill out of the material in the old mill erected a number of years ago.

The first effort to operate these mines was a spectacular failure. It is said to have been due to over-capitalization, and the establishment of a large plant when very little ore had been developed in the mines.

Mr. Kammal expects to operate the property on a very small scale, and is very sanguine of securing profitable results. Government geologists have made examinations of this district. There is no question that tin exists in considerable quantities. The extent of the deposits, however, is a matter of conjecture, as little exploration work has been done.

Tin, as a result of the war in Europe, just now is attracting much attention. It is known that important English smelting interests have decided upon the erection of a tin smelter in this country, which will handle Bolivian barilla. This fact alone has done much to stimulate tin mining in this hemisphere. The South Dakota deposits are the only ones of known commercial importance in the United States proper.

In Alaska, tin is being produced at Buck Creek, 120 miles northwest of Nome. A dredge is working on gold and tin near York, Alaska. Miners are getting tin with their gold on Sullivan's Creek, Tofty Gulch and Hot Springs, near the Tanana River, northeast of Fairbanks. Much development is expected on these Alaskan properties as the result of increased demand for tin.

Information recently received by the Geological Survey, is to the effect that the Bolivian tin deposits are capable of immense development. The supply of tin in the South American Republic only has been scratched, it is declared.

An interesting fact in connection with tin development in Bolivia, is the fact that Simon Batiño, who controls large mines, has an income larger than the Bolivian Government.

Although the United States consumes about 40 per cent. of the world's tin output, it produces an insignificant quantity and smelts practically none. On the other hand, Great Britain controls about three-fourth of the tin output of the world and a somewhat larger percentage of the smelted tin. On account of the war Great Britain has placed restrictions on the export of tin which have given American Manufacturers trouble in getting needed supplies.

The Bolivian ore, which has hitherto been shipped to Europe for reduction has comprised the largest quantity of ore free from British governmental domination and towards securing this ore efforts have been directed. It will be remembered that a few years ago a tin smelter to operate on ore from the Malay Peninsula was erected at Bayonne, N. J., but the British Government placed a heavy export duty on tin ores and the smelter was converted to other purposes.

Four tin smelters are understood to be in operation at Cornwall, England, and it is reported that another has been started at Liverpool, although of this the Survey has no direct knowledge. These smelters handle tin ores from all parts of the world. The British control about three-fourths of the world's tin production and a larger proportion of its tin smelting capacity, though only a small part of the ores are produced in England. The English ore all comes from Cornwall and in 1914 the Cornish ore contained about 4,000 long tons of tin.

The tin of the Malay Peninsula is mostly smelted in two smelters, one of which is at Perak and the other at Singapore. These smelters also handle ores from Burma, Siam, and Austria. A part of the Alaskan ore is shipped to Singapore for smelting.

Australian ores, including Tasmanian, are in part smelted in Australia and in England. The Bolivian ores, containing in 1913 nearly 28,000 long tons and in 1914 nearly 22,000 long tons of tin, are shipped to England and Germany for smelting. Previous to the war, a large part of the Bolivian ore was smelted near Hamburg, Germany, by the firm of Robertson & Bense.

The ores mined in Banca and Billiton, about 15,000 long tons of tin per year, are smelted and controlled by the Dutch. A certain quantity of tin is produced and smelted in the province of Yunnan, China. A little is also produced in southeastern China. Figures on this output vary from a few hundred tons to a few thousand tons for 1913; no later figures are available.

As given by Quin's Metal Hand Book, 1915, Great Britain's imports in 1914 amounted to 32,398 tons of tin ore. Germany imported in 1913, 18,186 long tons of tin ore. These ores can probably be conservatively estimated to carry somewhat more than 60 per cent. of tin. Of the ores which go to Great Britain, Nigeria produced in 1914 about 4,714 long tons of tin and the Transvaal in 1913, 2,276 long tons of tin.

VAN H. MANNING REGARDED AS LIKELY BUREAU HEAD

Others are Mentioned as Possible Successors of Dr. Holmes—Secretary Lane Has Made no Recommendations as Yet

Speculation is rife as to whom will be chosen as director of the Bureau of Mines. The Secretary of the Interior has made no recommendation to the President as yet. It was stated at his office that he had formed no conclusion as to the man who should have the place.

Mr. Lane attaches the greatest importance to the directorship of the Bureau of Mines and it may be several weeks before he finishes weighing the merits of those who are eligible for the position.

Van H. Manning, the acting director, who has been assistant director since the foundation of the Bureau, is regarded as the most probable man for the appointment.

Mr. Lane is thoroughly familiar with his qualifications and it is expected that he will be most likely to recommend a man of whose abilities he has a personal knowledge.

Several men are being mentioned in the general discussion of those qualified to fill the place. Dr. Chas. L. Parsons, in charge of mineral technology at the bureau, doubtless possesses splendid qualifications for the place, but probably would not accept it if named as it would mean the relinquishment of his radium research. George S. Rice, chief engineer of the bureau, is being urged in some quarters. W. C. Mendenhall, head of the Land Classification Board of the Geological Survey, is another whose name is heard in connection with the discussion of those qualified for the place.

There is the bare possibility that the Secretary may consider the suggestion that an outside mining engineer be recommended.

Several newspapers jumped to the conclusion that James F. Callbreath, Secretary of the American Mining Congress, would be a candidate for the directorship. The unauthorized publication of this article led to the following letter from Mr. Callbreath to Secretary Lane:

"Upon my return this morning from an extended Western trip, I find that it has been announced that the writer is a candidate for appointment as director of the Bureau of Mines.

"In view of the many inquiries as to the attitude of the American Mining Congress concerning this appointment, will you permit me to say that I am not a candidate and that the American Mining Congress has and will have no candidate for this position?

"The active interest of this organization in the establishment of the Bureau of Mines and our special interest in its success justify a sincere desire that the man who is selected shall be thoroughly equipped for the work, familiar with the needs of the various branches of the mining industry, and able to carry on the most efficient work which has been accomplished under the direction of the late Dr. Holmes,

whose death is a matter of sincere regret to all those who have the welfare of the mining industry at heart.

"I feel sure that our directors will feel complete confidence that your recommendation for appointment will be such as to meet fully the comprehensive and delicate requirements of the position."

The following letter was received in reply:

The Secretary of the Interior,
Washington,
July 24, 1915

Dear Mr. Callbreath:

I have your letter of today, and appreciate very much the attitude of the American Mining Congress in the matter of the selection of a successor to Dr. Holmes.

Cordially yours,
(Signed) FRANKLIN K. LANE.

Mr. J. F. Callbreath, *Secretary*,
The American Mining Congress,
Washington, D. C.

SULPHURIC ACID MAKERS WANT CHEAPER SULPHUR

Declare American Product Can Be Sold So As To Replace Entirely Foreign

Pyrite

Scarcity of ocean bottoms has restricted imports of pyrite from Rio Tinto mines of Spain. The demand for this important product is greater than ever before. This is caused by the abnormal demand for fuming sulphuric acid used in making explosives.

It is stated that American manufacturers of sulphuric acid prefer using sulphur instead of pyrite. With sulphur held at \$20 per ton, it is impossible to use it extensively in manufacturing the acid. If sulphur could be obtained for \$15 per ton, it would supplant foreign pyrite entirely, it is stated.

Sulphur is being mined greatly in excess of consumption. At least one American property is storing sulphur in great quantities. That it could be sold for \$15 per ton, and still allow a fair margin of profit, is claimed by some. Hope is entertained on the part of manufacturers of sulphuric acid that the increasing production of sulphur from Texas fields, may reduce the price of the element, which has been arbitrarily fixed for many years.

Reports on Chromic Iron

The production of chromic iron ore in 1914 is the subject of a report which has just been printed by the Geological Survey.

SLIMES MADE MORE WORKABLE, INVENTOR FROM SAN FRANCISCO CLAIMS

Uses Soap Water Over and Over Again in Improved Flotation Process—London
Man Patents Parts for Ore Roasting and Drying Furnace—Frank
Sessions, of Columbus, Gets New Patent

Patents of interest to mine operators have been granted as follows during the past month:

Ore Concentration, No. 1,142,822. This invention is by John W. Littleford, of San Francisco, California, and relates to improvements in separating valuable mineral from ore slimes. Its object is to render slimes more amenable to the separation of valuable mineral.

Mr. Littleford claims that if fine slimes in the ore pulp can be coagulated or brought into a flocculent condition, they do not exert so great a retarding effect in the settlement of the valuable mineral, and that it can be recovered more readily on concentrating tables or otherwise.

The silicious or gangue slimes are coagulated or gelatinized or both by adding to or mixing with the ore pulp a small amount of saponaceous material or soap, either in the form of an emulsion or otherwise. The small proportion of soap or soap emulsion is added to or mixed with the pulp, and the mass stirred to bring the soap particles in contact with all portions of the slimes, and the slimes quickly coagulate or become flocculent and settle with comparative rapidity. The water containing the soap is not impoverished and may be used over again, thus reducing the cost of the process. A very small quantity of the soap or emulsion in proportion to the slimes is sufficient to produce the desired coagulation.

USES PART OF FURNACE

Ore Roasting or Drying Furnace, No. 1,143,438. This invention is by Harry Mackenzie Ridge, of London, England, and relates to multiple hearth furnaces for roasting or drying crushed or finely divided ores, concentrates, slimes or the like, wherein the ore is rabbled and caused to traverse the several hearths in succession by the operation of a series of rabble arms, carried by a number of suitably spaced vertical shafts, which extend downward or upward through the several tiers of hearths.

The primary object of the invention is so to construct such a furnace that part can be put out of operation for the purpose of renewals and repairs, without shutting down the entire furnace.

The rabblers, feed holes, and the discharge holes from the various hearths are arranged so that in normal working, when the entire furnace is in operation, the ore traverses the entire length of each hearth. Should it be desired to cut out part of the furnace, the rabble shafts of that part are stopped and the ore, by the opening or closing of one or more inlets or discharge outlets, by the action of the rabble arms, will traverse

in succession the several hearths of the other part of the furnace.

IMPROVES ORE CRUSHER

Stone Crushing Machine. No. 1,141,581. This machine is invented by Ture Gustaf Rennerfelt, of Stockholm, Sweden. It relates to improvements in a machine for crushing stones, ore, clinkers and similar material.

The primary object of the invention is to create a machine of high mechanical efficiency which shall be reliable in operation and require a comparatively small amount of driving power. In this machine bearings are not liable to heat, and no delicate part shall be broken in case of overload. It has the advantage of being shorter in length than the ordinary stone cutter, and, by reason of higher efficiency, requires a flywheel of comparatively small weight. These advantages are of special importance since the machine must be transported frequently over rough country roads.

Instead of using toggle joints and eccentric with small eccentric radius, the machine comprise an unequal armed lever and roller, together with means for swinging the lever back and forth. The lever is fulcrumed in the frame, and the roller placed so that it can roll back and forth between the free end of the jaw and the shorter arm of the lever.

ELIMINATES FEEDING APPARATUS

Mining Machine. No. 1,143,144. This invention is by Frank L. Sessions, of Columbus, Ohio. Its object, generally stated, is to provide a machine having improved means for driving the cutters, for feeding the cutters against the coal, and for controlling the feed of the cutters. The machine not only effects the automatic feed of the carriage, but also automatically controls the feed according to the character of the coal or other substances which the cutters engage. It disposes entirely with all of the ordinary feeding apparatus, such as racks and pinions, shafting and gearing ordinarily used.

USES RESIDUE ALSO

Separation of Mixed Sulphide Ores. No. 1,142,821. This invention is by Henry Lavers, of England, and relates to improvements in ore concentration. Its object is the separation of various metallic sulphides from each other by means of flotation separation. (This includes concentrates, tailings, slimes or other products containing mixed metallic sulphides.)

An interesting feature of this invention is that if the finely pulverized ore containing mixed sulphides is suspended in slightly alkaline water, is subjected to the agitation-froth process with

the use of a suitable frothing agent, a flotation product can be obtained containing the bulk of the metallic sulphides which are thus separated from the gangue. If the concentrates are then re-treated by the agitation-froth process (still in alkaline circuit) and with the addition of a salt chromium, it is possible to obtain a flotation product relatively high in certain sulphides on the one hand and a residue relatively high in other sulphides, on the other hand.

The following is an example of the application of the invention:

An ore containing 9.0 per cent. of lead, 28.2 per cent. of zinc and 14.2 per cent. of iron was crushed very finely and then subjected to froth flotation treatment in apparatus of well-known type by being vigorously agitated with four times its weight of water at 130° F. containing solution of sodium carbonate amounting to 22 pounds per ton of ore, sodium bichromate amounting to 6 pounds per ton of ore, eucalyptus oil amounting to about one-half pound per ton of ore. The flotation product obtained from this operation consisted of a concentrate containing 50.1 per cent. of zinc, 4.25 per cent. of lead and 8.3 per cent. of iron, while the bulk of the iron and lead were left in the residue.

CLEAN DISKS EASILY

Ore Grinder. No. 1,144,305. This invention is by Edward F. McCool, of Victor, Colorado, and relates to ore grinders specially adapted for use in grinding ore for samples. Mr. McCool claims that this invention makes it possible to clean thoroughly the disks so that the quality of ore ground at one operation will not in any way affect the quality of the next charge.

In part the grinder is described as follows:

"The grinding function is performed by two disks, to which the ore to be ground is fed through a hopper, carried by one of the disks, the last-named disk being comparatively stationary, but mounted, to permit, to a limited extent, a rocking action to compensate for any unevenness. The operating shaft is mounted eccentrically within another shaft. To one extremity of the operating shaft is secured a head grooved to receive the tongue of a rotary disk, which cooperates with the first named disk, to perform the grinding function. Power is transmitted, initially to the hollow shaft upon which a fast pulley is mounted. This shaft carries a crank arm upon the outer extremity of which is mounted a pinion, which meshes with a larger gear on the operating shaft. Provision is further made for swinging the grinding head away from the rotary grinding member, which gives opportunity for thorough cleaning."

SEPARATES ZINC

Zinc-smelting Furnace. No. 1,444,036. This invention is by James M. Hyde, of Berkeley, California, and relates to smelting metal bearing materials containing zinc or any other volatilizable metal or metallic compound and especially the class of ores containing zinc and other metals such as lead, copper, gold and silver.

Its object is to furnish a machine in which the ore and reducing agent may be mechanically fed into the smelting chamber. It also enables the material removed from the volatilizable

metal, to be withdrawn from the smelting chamber during the smelting operation. This is accomplished by means of a conduit or opening. In removing the metal by this means, the machine effectively prevents efflux of volatilized metal, influx of air, or products of combustion into the smelting chamber or retort. The removal of the volatilized metal from the retort and its condensation is provided for by an externally opening aperture from the retort and a condensing device attached thereto.

IMPROVES COAL CUTTER

Electric Motor-driven Coal Cutter. No. 1,145,331. This invention is by Robert Martin, of Irvington, New Jersey. It relates to improvements in mining machinery, and particularly to electric coal cutters.

The object of the invention is to provide a machine, with a pick carrying rod, an armature rigidly secured to the rod, means for reciprocating the rod and armature, and electro-magnet and electro-responsive means for automatically operating the magnet, in order to disconnect the magnet from the armature, which is secured to the pick carrying rod to enable the pick carrying rod to deliver the blow through its own momentum, and at a time when the rod is disconnected from the means which reciprocate. It also provides the armature holder and magnet with suitable air-cushioning means.

KEEPS RAIL ENDS RIGID

Rail-Joint. No. 1,145,321. This invention is by John M. Langford, of Leesville, South Carolina, which relates to improved means for connecting and supporting the meeting ends of two rails.

This invention provides a novel and practical construction of angle bars, which include depending side members in the form of a saddle and yoke and the meeting ends of the rails so that the joint is effectively reinforced and danger of sinking of the rail ends is reduced greatly, if not entirely overcome.

It also provides a means for retaining the wedge member against longitudinal movement with relation to the saddles or yokes, to prevent the outward spreading of the saddles, and also adjusts the height of the member that it will firmly engage with the rails, locking keys being provided for the adjusting means which contact with the longitudinal edges of the rails. The block is held at its top and bottom against movement.

SIMPLIFIES COMPASS READING

Azimuth-Compass. No. 1,145,056. This invention is by John F. Cole, of Somerville, Mass., and has for its general object, the providing of a compass having simple construction in which the reading can be made by the observer while his eye is on a distant object, without the necessity of employing either a telescope or a narrow slit with a hair line (commonly called a sight vane) for sighting distant objects.

This object is obtained by using means associated with the compass by which the virtual image of the lubber-line and the adjacent portion of the compass card are projected in a direction

parallel to the horizon. This enables the observer to direct his vision toward the distant object by holding the instrument between himself and the object, with the lubber line in the general vertical plane of the object, so that the image of the lubber line and the adjacent portion of the compass card will appear to the observer directly in his line of vision.

LOADS COAL IN CARS

Mining Machine. No. 1,143,897. This invention is by Jefferson E. Flexner and Edward O'Toole, of Gary, West Virginia. It relates to the class of machines used in mining coal, and particularly to the construction and arrangement of cutter heads used on coal cutting machines.

One object of the invention is to provide a mining machine having a rotary cutter head mounted thereon constructed and arranged to remove the coal brought into contact with the cutters or picks and to cut the clearance necessary to admit the constantly advancing machine in removing the coal from the vein.

It is also claimed that this invention provides a rotating cutter head, mounted on the mining machine, to oscillate or rock while rotating, in operating on the coal vein so as to cut the clearance necessary to accommodate the coal mining machine and its driving mechanism in the forward movement during operation of the machine.

It provides also for a machine having improved means for mechanically removing the coal as mined into mine cars, or into position to be placed in mine cars.

SEPARATES IRON CONTENT

Process for the recovery of metals from ores and the like. No. 1,144,402. This invention is by Charles S. Vadner, of Salt Lake City, Utah.

Among other things Mr. Vadner claims for his discovery that it will recover, at a financial profit, copper, silver, and zinc from iron, purchased either as high grade iron ore, or as "scrap." It also will recover from low-grade copper ores, the iron therein contained, and any gold or silver which it may contain.

CALIFORNIA ALL BUT LOSES FIRST PLACE AS OIL PRODUCER

More petroleum was produced in 1914 than ever before in the United States. The total amount of petroleum recovered during the year amounted to 290,312,535 barrels. Oklahoma, as a result of the enormous production of the Cushing Pool, all but wrested first place from California. Wyoming showed the greatest relative increase. Its 1914 production exceeded that of the previous year, 48 per cent.

Want Canadian Spelter Favored

The suggestion was made in the House of Commons by Sir Edward Cornwall that in the event of purchases of spelter being made in America there should be discrimination in favor of metal made in the United States from ores produced in British Columbia. The ministry of munitions promised to consider the suggestion.

FIELD WORK IS IN PROGRESS IN MANY MINING AREAS

Below are the quadrangles containing mining areas, on which Geological Survey field work is now in progress. The names of the party chiefs also are given:

<i>State</i>	<i>Quadrangle</i>	<i>Party Chief</i>
California,	New Almaden,	E. P. Davis;
	Preston,	J. P. Harrison.
Colorado,	Naturita,	C. L. Nelson.
Idaho-	St. Regis,	J. E. Blackburn;
Montana,	Salmon and	
	vicinity,	T. M. Bannon;
	Mackay,	T. M. Bannon.
Montana,	Drummond,	K. W. Trimble.
Nevada,	Pioche District,	H. H. Hodgeson.
New Mexico,	SE. $\frac{1}{4}$ Koehler,	R. W. Berry.
Utah,	Mercur,	A. T. Fowler.

It is planned to take up work on the following areas later in the season:

<i>State</i>	<i>Quadrangle</i>
Arizona,	Chiricahua.
California-Nevada,	Yellow Pine Mining District.
Texas,	Electra-Burnet-Beaver Creek Oil Field.

Beginning in this issue, decisions of the Department of the Interior with respect to mineral land cases will be printed in the JOURNAL. These cases are handled by the General Land Office, after which they are considered by the Secretary of the Interior, from whose office the final decision is issued.

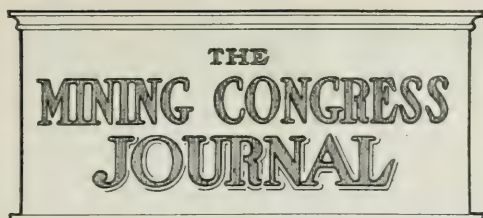
Attention is called to the far-reaching importance of the two cases reviewed in this issue. The principles applied here cover a large number of mineral cases throughout the west.

DEATH-RATE SHOWS DECIDED DECREASE IN INDIANA MINES

Indiana coal mines produced 16,641,132 tons of coal, values at \$18,290,928,000, during 1914. This is a slight decrease over 1914. The production of machine mined coal amounted to 56 per cent. of the total. During the year there were forty-four fatal accidents in the State. The death-rate was 1.97 per thousand, in 1914, as against 2.97 in 1913.

INCREASING PRICE DRAWS ATTENTION TO QUICKSILVER

Rapid increase in the price of quick silver is resulting in additional interest being paid this metal in the mining districts where it is known to occur. Special activity is reported by the Geological Survey in Nevada. The deposits in the Pilot mountains, east of Mina, and in prospects at Beatty, Nevada, are attracting special attention. The Nevada deposits are discussed in a report recently made by Adolph Knopf.



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EDITORIALS

RESPONSIBILITY OF SERVICE; MR. BRYAN'S EXAMPLE

The recent meteoric descent of Mr. William J. Bryan was more seeming than real. Real to the many friends and admirers of his past, but seeming, to those who had more closely analyzed the causes of his resignation from President Wilson's Cabinet.

We have before felt called upon to criticize those who do not recognize the responsibility of service, the duty to render honest service for the compensation received.

This responsibility is the same, whether in a job or a position; whether the compensation to be paid is a bare living wage or a princely salary.

A theory is sometimes advanced that if the majority shall perform its best service, no work would remain to be done by the minority, and, in consequence, a duty is implied to so rob the employer as to provide work for all.

It is hard to imagine a condition under which this theory can be justified. In practice the people of the world always absorb as many of the luxuries as their

buying ability will permit. Many articles which at first seem to be luxuries in a short time become practical necessities, and a continuous demand for productive labor is created.

INCREASES WAGES

This process not only increases the demand for labor, but also increases the wages which can be paid. In the production of life necessities the wages paid must be measured by the purchasing ability of all the people; in the production of luxuries the wages paid come from a more elastic fund, which can increase labor's portion without burdening unduly the consumer.

There is, however, an underlying principle of much greater importance. The duty to earn the wages to be paid should be just as sacred as the obligation to pay the wages agreed upon.

What is the measure of that obligation? Is it to render just enough service to insure the collection of the wage? Or is it to render the best service which the individual is able to perform during the hours agreed upon?

CONSUMER BENEFITS

If full service is rendered, both physical and intellectual, the higher efficiency thus effected gives the product to the consuming public at the least cost of production, increases the use of the article because of its cheapness and increases the number of those whose service is required in the particular industry.

If the least service possible is to be performed, then follows increased cost of production, increased cost to the consumer, and a decrease in the amount consumed and a decreased demand upon labor.

After all, the wages paid for productive service must be measured by the purchasing power of the consumer. This rule may not apply to service rendered the Government, but the principle of honesty in service is equally important.

Mr. Bryan did not go unrebuked for keeping his lecture engagements while a member of the cabinet, but the criticisms were largely leveled at the statement of the "Great Commoner" that he could

not meet his obligations on the salary of \$12,500.

DUTIES OF OFFICER

The vital question was whether, the administration having employed him as Secretary of State, he was entitled to the benefit of his "full time, energy and ability," or whether his employment was a matter of personal aggrandisement—whether public office is a public trust or a private graft.

This is said not in criticism of Mr. Bryan personally, but of a method of thinking so dangerously prevalent that even Mr. Bryan, with his high ideals, could even unconsciously become a victim of its insidious influence, and so prevalent that this exhibition in high place called forth no general public disapproval.

If it is true that virtue brings its own reward, it must be conversely true that a lack of virtue should bring its own punishment.

NEGLECTED HIS DUTY

Mr. Bryan's experience seems to demonstrate the truth of this theory. As Secretary of State, he neglected his duty. President Wilson needed the advice of the Department of State. Mr. Bryan was absent. The President necessarily consulted some one else in the Department. Having considered a particular matter with another than the Secretary, what more natural than that after Mr. Bryan's return the President should continue to confer with the same official? Why waste time to go over again the details of a situation with Mr. Bryan when another thoroughly conversant with the subject was available? President Wilson must either waste time to which the nation, his employer, was entitled, or ignore the Secretary of State. The President, respecting the principle of honesty of service, chose the latter course. The Secretary was ignored; the situation was intolerable; Mr. Bryan sought excuse to escape with dignity. The first note to Germany was so emphatic that a denial of its requirements must call for more emphatic action. The denial was probable and thus a dignified opportunity for resignation would be created. The denial came,

but President Wilson, accurately sensing the attitude of the American people, replied calmly to the German note, and failed to create the anticipated excuse for resignation. The situation became so intolerable that it could be endured no longer. The resignation followed, but the excuse for it failed completely. Mr. Bryan became a victim of his own failure to recognize the responsibility of service.

DEATH OF DR. HOLMES

CAUSES MANY TO GRIEVE

Dr. Joseph A. Holmes is dead. At Denver, Colo., on July 13, 1915, without suffering he quietly passed away.

His last peaceful hours were in striking contrast to his life of continual striving for the benefit of his fellow-men.

He leaves a record of successful effort in bettering mine conditions and a movement which will continue its uplifting work long after it shall be forgotten that he was its pioneer.

His constructive genius at the head of the Technologic Branch of the United States Geological Survey made possible the establishment of the United States Bureau of Mines as a permanent agency for mining betterment.

The Bureau of Mines came into existence in spite of great opposition, some openly voiced but much more in a great undertone of public belief which sincerely questioned whether the delicate and dangerous questions with which it must deal could be handled without dire results to the industry for which it was to be created.

Dr. Holmes as Director of the United States Bureau of Mines has managed the delicate and far-reaching work of the bureau with such rare sagacity as to command almost universal approval. Few men ever lived so aggressive a life and left behind so nearly universal approbation.

Always aggressive in overcoming the opposition to his plans for the uplift of humanity, always broadly considerate of the views of his opponents, always courteous and kind to his subordinates, always ready to cooperate with and give credit to the associates with whom he worked, Dr. Holmes leaves a memory

dear alike to his family and to the many friends to whom his death comes as a great personal bereavement.

MINE OPERATORS SHOULD JOIN MINING CONGRESS

A part of the mining men of the country are paying for a service from which all connected with the industry reap benefits. We refer to those who support the national organization of mine owners and operators. The American Mining Congress has the support of more than 1,500 of these men. There are 90,000 owners and operators of mines on the list of the Geological Survey. Each one of these should be contributing his pro rata to the national organization.

It is not necessary to present arguments as to the necessity of a national organization. The fact that they are maintained by every industry is sufficient proof of their need.

The amount of good that can be done by a national association depends directly on the support it receives from those it serves.

ETHICS HAMSTRINGING SCIENTIFIC RESEARCH

There is a tendency among scientists to be mean to each other. This has been demonstrated with particular clearness in the treatment accorded Dr. Walter F. Rittman. Before there was any possible chance of knowing what Dr. Rittman had discovered, he was the subject of bitter criticism. He was accused of going off at half cock. Some said he was claiming as original discoveries, well known truths. His standing as a scientist was questioned. There has been a general lack of kindness in the discussion of the Rittman processes.

Dr. Rittman is not the only victim. No scientific man feels safe. He realizes that he will be preyed upon by fellow scientists if he shows indications of being progressive enough to loosen, even a little, the straight-jacket of ethics.

Great learning oftentimes is coupled with narrowness. Jealousy often is a

more prominent characteristic in a well educated man than in the man not so well versed in books. If a greater spirit of cooperation could be instilled into the average scientific man it would mean much for mankind. Fortunately there are many exceptions to the above rule.

Physicians offer a good example where mistaken ethics are a bar to great good. Quacks and makers of nostrums advertise. This has been done for decades because they realize that this is the most effective means of gaining the attention of the public. Because quacks advertised first the conservative and able physician decided he would not advertise. From this beginning has grown the present opposition to advertising on the part of doctors of medicine. As a result thousands have suffered. They have accepted the advice offered them in their most available mediums. There has been no effort to offset this evil or to instruct the public in the need for care in selecting remedies and physicians. Many reasons are advanced to show that it would be impracticable for each physician to advertise. Even admitting this to be the case there is no reason why physicians' associations cannot use space in widely circulated publications. Terse warnings against the dangers of nostrums and concise instructions of proper procedure in case of illness would be blessings for the poor and ignorant. Better educated classes would benefit as well.

Just as ethics stand between physicians and great good they might accomplish, so are ethics and jealousies hamstringing a considerable volume of high class scientific effort in the United States.

MINING CONGRESS CONVENTION OFFERS UNUSUAL ATTRACTIONS

Every member of the American Mining Congress, both active and associate, is entitled to a seat at the Annual Convention to be held at Exposition Memorial Hall, San Francisco, Cal., September 20 to 22, 1915. The convention will be made up of members of the congress and delegates appointed by authority given in the official call.

We urge every member to take advantage of the opportunity to meet the mining men of the country and at the same time to attend the Panama-Pacific Exposition. Members who are planning to attend will confer a favor by advising the Secretary of such intention. The convention will follow the meeting of the American Institute of Mining Engineers and precede the meeting of the American Mine Safety Association. The two weeks beginning September 13 and ending September 25 have been selected as the meeting time of many of the engineering societies, and that period will probably witness the largest gathering of mining and professional men ever assembled in the country.

ALL SCIENCE CAN USE EVERY-DAY LANGUAGE

"I believe all science can be translated into language perfectly clear to the layman." This statement was made last week by Dr. E. Lester Jones, new superintendent of the Coast and Geodetic Survey.

In saying this Dr. Jones has expressed tersely a policy which is invading the entire Government Scientific Service. It is specially the case in the Bureau of Mines and the Geological Survey. We have found occasion to make mention of this fact frequently, and wish to take advantage of this opportunity of saying that the American Mining Congress heartily approves this course.

Mining has suffered severely from the fact that the public is not familiar with the industry. Owing to the fact that mining is necessarily conducted in isolated places and in certain restricted sections of the country, the opportunity for a proper conception of the industry has been limited.

The principles of agriculture are so well understood that it is very generally known that a man undertaking farming, given suitable land and proper equipment, is very likely to be successful.

The fact that farming lands are made the basis of ten times more swindles than are mining lands does not lead the public to believe that farming is not a safe business. If the same knowledge of mining were advanced, the fact that a grandfather had purchased some bad mining stock could not be given as a cause to condemn the whole mining industry.

Americans have great respect for Uncle Sam and the men who work for him. When they find that the Government's reports on mining camps and minerals are interesting and are easily understood much prejudice will be overcome.

The tendency toward the use of popular language in the Bureau of Mines and the Survey is certain to aid in increasing confidence in the industry among smaller investors especially.

CHIEF JUSTICE DEFINES AN UNFAIR LEGAL PRACTICE

Before litigations are undertaken or defended, consideration should be given to the following ruling by the Chief Justice of the United States:

"It is the office of the courts of justice to decide the rights of persons and property, when the persons interested cannot adjust them by agreement between themselves, and to do this upon the full hearing of both parties. And any attempt by a mere colorable dispute, to obtain the opinion of the court upon a question of law which a party desires to know for his own interest or his own purposes, when there is no real and substantial controversy between those who appear as adverse parties to the suit, is an abuse which courts of justice have always reprehended, and treated as a punishable contempt of court."

This should sink deep in the minds of those attempting to hamper legitimate undertakings by groundless legal claims.

INTERESTS OF MINE OWNERS BEING WATCHED CAREFULLY

If you are mining within the confines of the United States or its possessions, vigilant eyes are looking after your interests in the national capital. Nothing of import to the mining industry goes on very long in Washington without coming to the attention of the American Mining Congress. Perhaps it is a bill introduced by some Representative from Arkansas; maybe it is an important case before the Commissioner of the General Land Office; perhaps it is an activity of the Bureau of Mines or it may be any one of a hundred things affecting the interest of the man toiling on a western mountain side—regardless of what it is, it is being watched. The Arkansas Representative may want to see some other industry profit at the expense of mining. His bill has been in the hopper but a few hours until it is scrutinized by an American Mining Congress man. If it is inimical to the miner the alarm is given at once. Representatives and Senators from the mining sections of the country are notified. Newspapers are supplied with a concise account of the bill and the effect it will have on mining. The question is outlined in detail in THE MINING CONGRESS JOURNAL, the publication in which 1,500 of the country's mine operators are equal copartners. The Arkansas man would not get very far with his plan, it can be seen. This

continual alertness discourages many attempts to profit at mining's expense.

The great bulk of the work of the Washington office of the Mining Congress is constructive. Some negative work has to be done, because selfishness is well ingrained into human nature. We must watch our field to prevent unfair encroachment. But the big task is in keeping abreast with the needs of the industry and in seeing that it gets the legislation and the Government aid needed to highest and best development. Another task of no mean proportions is the acquainting of those who read *THE MINING CONGRESS JOURNAL* with the work that is being done as a result of the expenditure of many hundreds of thousands of dollars of the people's money.

The foregoing does not begin to express the things being done week in and week out by the Mining Congress. A full account in one article would be tiresome. We will break it up and tell you about it piecemeal.

PLACER MINERS DELAY GOVERNMENT REPORT

It is to be hoped that all operators of placer mines in the United States will cooperate actively with the Geological Survey in its attempt to compile one volume of all available information in regard to American placers. To be successful and to be timely, prompt and full information must be furnished the Bureau experts. Cards are being mailed to all operators on the Survey's list. This list doubtless contains no less than 95 per cent. of the operators, but should any man interested in placer mining not receive a card, it is urged that he request one at once.

As a rule mining men are very prompt to reply to these statistical inquiries sent out by the Government. It can be said, however, that this does not apply to a considerable portion of placer mining interests. There has been some tendency not to make these returns, we are informed. We take this opportunity to request members of the American Mining Congress who have placer interests, to aid in the very necessary work now in progress.

FOSSIL PLACER DECLARED TO EXIST IN NEW MEXICO

What is claimed to be a fossil placer has been discovered in the Baldy gold district of New Mexico. Willis T. Lee, a geologist in the Government service, has been sent to make investigations. The Baldy district is contiguous to the Raton coal district. It is a conglomerate in the cretaceous. The Baldy district has been producing about \$50,000 worth of gold ore per month.

JUDGE THOMPSON'S COMPILATION OF MINING LAWS IS READY

Two Volumes Published by Bureau of Mines of Interest to All Engaged in Mining Enterprises

The United States Bureau of Mines has just issued Bulletin 94, "United States Mining Statutes Annotated," in two volumes, which is now being sold by the Superintendent of Documents, Government Printing Office, Washington, D. C., at \$2.50 a set. It is the work of Judge J. W. Thompson, of the Bureau's legal department.

This bulletin is a compilation of all sections of the United States Revised Statutes and of all acts of Congress relating to mines, mining, mineral lands and the mining industry on the public lands. It is intended for persons engaged in mining enterprises that come within the scope of Federal mining laws and as a guide as to the determination of mining rights and duties. It shows the status of every Federal mining law, both laws relating to metal mining and those relating to coal, oil and phosphate and to mining on public, Indian and railroad lands.

The bulletin relates only to the United States mining laws and does not include any of the laws of the different states in regard to mining. Another bulletin which the Bureau of Mines hopes to print in the future will contain the state laws.

In addition to the Revised Statutes and the acts relating to metal, coal, and oil and gas, acts relating to the following subjects, as they bear upon the mining industry, are included: Alaska, Indian Lands, Lead Mines, Philippine Islands, Pipe Lands, Railroad Grants, Rights of Way, Salines and Salt Springs, Settlers' Relief Acts, State and Public Grants, Stone Lands, Timber Cutting for Mining Purposes, Town Sites, Tunnel Acts, and Withdrawals.

All sections and acts are annotated. These consist of abstracts of decisions of all courts and public officers wherein any of these sections or statutes are explained, construed and applied. The annotations are arranged under each section or statute with appropriate title lines in definite order, and consist of plain propositions of law, and point out how the courts have cured many defects, made clear the uncertainties, and aided in the practical application of these statutes. The large number and wide range of these decisions show that the practical value of the mining laws depends on their present status as established by the courts. The person interested is thus aided in determining the course to pursue in applying any given act to his mining enterprise.

The preparation of these annotations involved an examination of more than 2,000 volumes of reports of various courts and public officers. The work is indexed and any desired subject may be found readily.

The preparation and publication of this bulletin have been so expensive, it has been necessary to place a price of \$2.50 on the two volumes. The volumes are cloth bound.

REPORT ON EXPLOSIBILITY OF COAL DUST NEARLY READY

**Expected to be One of the Most Important
Publications Since Founding of Bureau
of Mines**

**English Comment Indicates Consideration
Being Given Experiments on Which
Work is Founded**

Within a few weeks at most, one of the very important publications of the year, issued by the Bureau of Mines will be ready for distribution. It deals with the methods of preventing and limiting explosions in coal mines. Its authors are George S. Rice and L. M. Jones. The findings are based upon more than 200 explosions in the experimental mine at Pittsburgh. The report is being awaited with great interest by technical men throughout the world—in fact, great interest has been evidenced by British and other foreign authorities.

The report is not voluminous. It contains forty-two printed pages. It is concisely written, and is sufficiently devoid of technicality to be readily understandable by any practical coal miner.

In another column of this issue of the JOURNAL is an editorial taken from one of the leading English publications, indicating the importance attached to the Bureau of Mines experiments with explosives of coal dust.

When these experiments were first begun at Pittsburgh, explosions were produced in a tube. Visiting miners doubted results obtained in this manner, declaring that the explosion would have behaved differently had it taken place in a mine. On hearing this, the late Dr. J. A. Holmes, determined to have experiments in an actual mine.

A convenient site was selected and mining operations were begun at once. A tunnel was run on a coal vein with care to do the mining as it would be done in the average coal mine.

Under these conditions, explosions were brought about, where results could be checked with great accuracy. During the course of these experiments more than 15,000 mining men have visited the experimental mine and have witnessed the conditions under which this has been done. They agree with the English authorities that this work is far in advance of any undertaken in any country.

Copper Plants Work Full Time

In Arizona V. C. Heikes, of the United States Geological Survey, reports conditions improving and all copper plants brought to full capacity with two new smelters blown in.

Mica Report Completed

Douglas B. Sterrett of the Geological Survey has written a report upon the production of mica in 1914, which just has been printed. It will be furnished upon application.

EDISON MINERS' LAMP PASSES BUREAU OF MINES EXAMINATION

A miners' portable electric cap lamp manufactured by the Edison Storage Batteries Co., of Orange, N. J., just has been approved by the Bureau of Mines for safety, practicability and efficiency. Approval No. 10 has been issued to that company.

All approved equipment is to be distinguished by a plate bearing the seal of the Bureau of Mines, the approval number and other information relating to the approval.

A large amount of other mining equipment is under test.

George Otis Smith to Visit West

Dr. George Otis Smith, Director of the Geological Survey, will leave the latter part of August for the Pacific Coast. He will get in personal touch with most of the work being done by the Survey in the western States. He will time his trip so as to arrive in San Francisco in time for the annual convention of The American Mining Congress, and the other annual scientific meetings which are being held during the same week.

Install New Map Press

A new four-color map press has been installed by the Geological Survey. It is being used to turn out the maps of the guide books.

Last 5 Per Cent. Costs.

It is a matter of record in the Geological Survey that it costs more to obtain the last 5 per cent. of the data on any mineral production, than it does to get the rest of the returns. The Survey is sparing no trouble or expense in trying to run down absolutely all production of minerals within the boundaries of the country.

Siliceous Ore Shortage May Continue

Reports from El Paso are to the effect that the shortage of siliceous copper ore is likely to continue. The smelter as a consequence will not be able to run.

Colorado Gold Output to Increase

The Colorado gold output of 1915 will be larger, as increased shipments of gold ore are made from the Georgetown and Radersburg districts, according to a Geological Survey estimate.

Nevada Camps Prospering

Reports reaching the Geological Survey, from Wonder, Fairview, Rawhide, Terrell, Benway, Bermice, Alpine and other Nevada camps, indicate that exceptional success is attending mining operations in these places.

SEARCH SYSTEMATICALLY FOR POTASH IN OLD LAKE BEDS

**Geologists Prospect in Nevada, California,
Oregon, Arizona, Utah, New Mexico,
Texas and Oklahoma**

H. S. Gale and N. H. Darton are conducting their examinations of various regions in the West and Southwest, with the view to determining centers of Permo-Triassic, Pleistocene evaporation, with the idea of discovering centers of saline deposit.

Mr. Gale's search will be confined mainly to Nevada, California, Oregon, Arizona and Utah. Mr. Darton will confine his activities to New Mexico, Texas and Oklahoma.

It is pointed out that the search for potash deposits is very much like hunting for the proverbial needle in a hay-stack. All reported discoveries of the salt are investigated as quickly as possible by experienced geologists. Thus far they have failed to find deposits of certain commercial value among the many which have been investigated. Small pockets of potash exist throughout an extended portion of the West, but they are not necessarily indications of the proximity of large bodies, it has been demonstrated. Some potash has been found to exist at Searles Lake, while smaller deposits have been found in the red beds of northwestern Texas. Representatives of the Survey are examining systematically a wide extent of territory, guided by the best theoretical knowledge obtainable. Drilling is to be undertaken in more of the Nevada basins in which pleistocene lakes were evaporated.

MANY ANTIMONY MINES ON NATIONAL FOREST RESERVES

Two-thirds of the antimony properties now in operation are on forest reserves, according to Government records. The fact that these properties are being operated at present is an indication, according to information from Government sources, that there never was a reason for their being idle, other than the low price of antimony.

BULLETIN ON MT. LASSEN TO BE ISSUED BY SURVEY

Owing to the popular interest in the eruption of Mt. Lassen, the Geological Survey has decided to issue a special bulletin on this mountain, and its volcanic activity. It is the one active volcano in the United States.

Land Applications Many

Applications of various kinds for public lands are averaging 2,000 a month. On each application the Geological Survey reports as to the character of the lands, whether they are of mineral or water power value. The Survey handles all engineering questions, while the legal questions are considered in the office of the Secretary of the Interior.

PERSONALS

Karl Kithil, in charge of mining technology at the Denver office of the Bureau of Mines, has started an investigation of the recovery of platinum from black sand and gold residues.

F. J. Bailey, senior clerk at the Bureau of Mines, has been promoted to assistant chief clerk. Mr. Bailey, however, has been performing the duties of chief clerk at the Bureau

for the past two years.

P. M. Riefkin, an engineer of the Bureau of Mines, is on a trip through the South sampling coal at Government stations.

G. H. Ashley spent two weeks last month on a vacation trip in the North and East.

Robert G. Wilson, of the Tonopah Development Company, was a business visitor to Washington early in July.

C. G. Storm, a chemist with the Bureau of Mines at Pittsburgh, has resigned to take a position with the Aetna Explosive Company.

A. Cressy Morrison, secretary of the National Acetylene Association, spent a few days in Washington on business recently.

T. S. Harrison, of Cody, Wyo., a mining engineer well known in Colorado and Wyoming, has been spending several days in Washington on business. Mr. Harrison is devoting most of his time at present to the Grass Creek Oil Field. While a considerable portion of the field is tied up on account of withdrawals, Mr. Harrison reports that some drilling is being done and encouraging prospects are entertained by operators in that section.

WAR STIMULATES INTEREST IN CHEMISTRY IN U. S.

As a direct outcome of the war, there has been a greatly increased interest in chemistry. This is shown at the Bureau of Mines and Geological Survey by the numerous inquiries along chemical lines that are being received. While greater interest attaches to the chemistry of explosives, other features of the science are being brought out by the changed conditions due to the war.

MANY ASK NAMES OF BUYERS OF ANTIMONY

An unusually large number of inquiries are coming to the Geological Survey, asking the names of buyers of antimony. The Survey's list of buyers is thought to be absolutely complete, and is being furnished immediately upon application.

UNION PHOSPHATE COMPANY LOSES ITS APPEAL FOR LODE CLAIM AND MILL SITE

Idaho Company Fails in Long Fight Over Mining Properties in Blackfoot District
—Motion for Rehearing Denied—Other Important
Mineral Land Decisions

A decision in the important case of the Union Phosphate Co. in the matter of mill site—a rejection of an application for a lode claim—just has been rendered by A. A. Jones, First Assistant Secretary of the Interior. The decision may be summed up briefly as follows:

"Section 2337, Revised Statutes, contemplates that a mill site used and occupied only for mining purposes in connection with a lode mining claim or group of claims shall be patented simultaneously with the lode claim or claims to which it is appurtenant, unless the lode claim or claims shall have been previously patented; and the rejection in its entirety of an application for patent to a lode claim or group of claims carries with it an included application for patent to a mill site used only in connection with such claim or claims."

Mr. Jones, in his statement of the ruling, says, in part:

AN APPEAL FROM THE COMMISSIONER

"This is an appeal by the Union Phosphate Co. from so much of the commissioner's decision of October 6, 1913, as holds for rejection its mineral application 012,751, to the extent of the North Lake mill site claim, Blackfoot land district, Idaho.

"The mill site claim was applied for in connection with the Bingham, Original, Broken Hill and Mohawk lode mining claims, and the commissioner's action with respect to the mill site claim is based on the grounds (1) that it did not appear from the record then before him that there was or had been at the date of the application any use or occupancy of the ground for mining or milling purposes; and (2) that subsequently to the date of the mill site location, the filing of the application for patent, the submission of proof thereon, and payment for the land, the mill site area was included in an executive order of withdrawal for power site purposes.

"The appeal is accompanied by an affidavit of the attorney in fact for the appellant company, wherein he avers that the mill site claim is now and was at the date of the application used and occupied as a dumping place for material taken from the tunnel (whose portal is on the mill site) projected for the purpose of developing certain lode mining claims, including those embraced in the present application. It is urged in the appeal that the use of the ground for dumping purposes is such a mining use and occupancy as is contemplated by section 2337, Revised Statutes, and that

this, together with the fact that the claim had been applied and paid for at the date of the withdrawal, operated to except the area from the withdrawal.

"A consideration of the questions thus presented is unnecessary to a determination of this case for the present application must, in any event, on the record as it now stands, be rejected, for reasons other than those assigned by the commissioner.

LOCATED IN 1907

"The lode locations, above mentioned, and with which and in the same application the mill site is sought to be patented, were made December 9, 1907, on account of deposits of rock phosphate contained therein. They lie end to end from north to south in the order in which they are named, along the line of outcrop of the phosphate deposit and form the northerly four of a group of fifteen claims, all located along a continuous outcrop of the same bed, extending for a distance of over 4 miles. The improvements, aside from two small excavations, of a total value of \$25, situated on the Original location, whose value is sought to be applied to these four claims in satisfaction of the statutory expenditures, consist of an undivided one-fourteenth interest in the cost of a tunnel, denominated by the United States mineral surveyor as improvement No. 3 whose total cost is given as \$3,230. Other workings are described.

"The width of these excavations, which is only 4 feet, and the numerous courses in which they are projected do not suggest to the department any intention on the part of the claimants to utilize the same as a working tunnel for the ultimate development of any of the claims here in question.

NO MILL EXISTS

"The mill site claim, included in the application, has no mill or reduction works thereon, but is utilized as a dumping place for material taken from the tunnel.

"The law relating to the patenting of mill sites, section 2337, Revised Statutes, reads as follows:

"Where nonmineral land not contiguous to the vein or lode is used or occupied by the proprietor of such vein or lode for mining or milling purposes, such nonadjacent surface ground may be embraced and included in an application for a patent for such vein or lode, and the same may be patented therewith,

subject to the same preliminary requirements as to survey and notice as are applicable to veins or lodes; . . . The owner of a quartz mill or reduction works, not owning a mine in connection therewith, may also receive a patent for his mill site, as provided in this section.'

"The law thus divides patentable mill sites into two classes: (1) Such as are used and occupied by the proprietor of the vein or lode for mining or milling purposes; (2) such as have thereon quartz mills or reduction works the ownership of which is disconnected with the ownership of the vein or lode. The second class may be, of course, patented independently of the lode mining claim. As to the first class, however, the law clearly contemplates that such a mill site shall be patented, if at all, only simultaneously with the lode claim or claims to which it is appurtenant unless the lode claim should have been previously patented. From this it follows that the rejection in its entirety of the application for patent to a lode claim or group of lode claims would carry with it also an included application for patent to a mill site asserted to have been used and occupied only for mining purposes in connection with the lode claim or claims to which such mill site is appurtenant.

"The application for patent to the lode claims here in question, having failed for the reasons above stated, the included application for the mill site claim must also be rejected.

"The judgment of the commissioner is accordingly affirmed.

"A motion for rehearing was denied by Assistant Secretary Sweeney."

DECIDES AGAINST COMPANY

Pacific Midway Oil Property Illegally Held, Interior Department Holds

One of the most notable cases which has come before the Land Office in years is that of the United States versus Pacific Midway Oil Company et al.

The land involved is situated near Maricopa, in the Sunset mining district of Kern County, California. More than a score of wells have been drilled upon this land. Enormous quantities of high grade ore have been recovered. It is agreed that more than \$900,000 has been spent in the development of the oil properties upon the land.

The land was classified as oil land June 22, 1909. On September 27 of the same year it was included in a departmental order designated as petroleum withdrawal No. 2.

CLAIMS OF COMPANY

The Pacific Midway Oil Company filed mineral application in this district April 28, 1911. The company claims: that through compliance with the mining regulations by it and its predecessor, it had become the owner of the Hawk Mining Claim; that its right of possession is based upon locations made by G. E. Taylor and others, on February 12, 1909

(seven months prior to its inclusion in the petroleum withdrawal).

Drilling operations on the property began in February and March, 1909. A complete standard outfit was installed by one of the original locaters. Thereafter, the Obispo Oil Company, a successor, began drilling for oil with the same rig. Oil in paying quantities was discovered June 6, 1910. The company claims that it is entitled by law to the land, as at the time of inception of development on any claim it was not withdrawn from mineral entry, and that the work of development was prosecuted uninterruptedly, until actual discovery of oil had been effected.

The Government charges that the location of the Hawk Placer Mining Claim was made by G. W. McCutchen, one of the alleged locaters, for his own use and benefit, through the use and employment, with their full knowledge and consent, of the names of his alleged co-locaters with the purpose and intent, by such device, fraud and concealment, to secure thereby, unlawfully, in direct violation of the statutes, a greater area of mineral ground than may be embraced, lawfully, in a single location by one individual.

GOVERNMENT CONTENTION

The Government also alleges that the various locaters did not in good faith locate and file location notices for the above described placer claim, with the intent that the legal title to the land embraced should be acquired pursuant to the law of the United States governing the locations, entry or disposition of public lands, valuable as placer ground, for their separate and several use and benefit.

Each of the persons mentioned made location and filed notices, it is alleged, pursuant to an unlawful agreement and understanding, either expressed or implied, entered into by each and every one.

Answer filed to these charges denies generally the charges preferred, and sets forth as matters of special defense that G. W. McCutchen and others had filed on another tract in 1900 in which the location was made for the use and benefit of all locaters. Title was relinquished by all except one, it is claimed, for the purpose of convenience in managing and operating the claim for the use and benefit of the locaters.

The actual facts in these negotiations, as set forth by the Commissioner of the General Land Office, are as follows:

"From the year 1899 to the year 1912, the McCutchen brothers, G. W., R. L., J. B., and W. C., were engaged in the business of locating and developing oil lands in Kern County. During this time numerous locations were made, and in a great many of them the names of the four McCutchen brothers were used together with those of four other persons. No articles of copartnership appear to have been executed until about the year 1912, but the four brothers appear to have been interested equally in most of the property located or developed.

"G. W. and R. L. McCutchen were the active members of the firm, or family association, and it is probable that they were interested in some

properties in which the other two brothers had no concern.

DID PUBLIC LOCATING

"Some of these locations were made in advance of any prospective purchaser and others were made at the request of interested persons. The McCutchens would search the records, ascertain what lands were vacant, and would locate and personally secure oil lands for \$10 per location, \$80 for a quarter section. They would perform assessment work upon the claim, if so employed."

One of the original locaters of the Lone Star claim was not consulted, the owner says, as to the use of her name and no other of the six locaters expected to receive any beneficial interest in the claim, or any compensation for the use of his name in connection with it. They permitted McCutchen to use their names as an accommodation, and not one of them, with the possible exception of White, intended to represent any or all of the original locaters.

G. W. McCutchen executed a quit-claim deed conveying his section to the Obispo Oil Company in February, 1909. After the organization of the company, the expenses for development were paid by it. The Obispo Oil Company drilled two original wells, which exhausted available funds, and work was discontinued. The Obispo Company did not resume work upon the claim.

Rinehardt T. Harding, a San Francisco attorney, visited the region in 1910. He was informed that he could make a deal with the Obispo Oil Company for the land upon which its wells had been drilled. Harding conferred with the officers of the company, and made arrangement for the development of the property. He thereupon set about to organize the Pacific Midway Oil Company. This company began operation in March, 1910, when the two old wells were examined. The first was found to be unserviceable, but it was believed that operations could be continued upon the second. This later was abandoned, and work upon a new well started. Oil in paying quantities was discovered at a depth of 1,600 feet, June 5, 1910. Various operations were conducted on surrounding lands thereafter by G. W. McCutchen.

COMMISSIONER'S CHARGE

This statement appears in the Commissioner's account of the case:

"With the exception of the discovery of oil in such quantities as to impress the land with mineral character, about which there was no controversy, there is scarcely a material representation made in the sworn statement, upon which the patent application was based, that was not proven erroneous or untruthful by the testimony adduced by the applicant at the trial."

This conclusion was drawn:

"Therefore the statement in the application 'that said work of development was prosecuted from the inception of development, uninterruptedly and with diligence by the locaters and their successors, until an actual discovery

of oil had been effected' is disproven in that there was a period of more than six months, after the Obispo Oil Company ceased its operations, and during which time the withdrawal order intervened, before work was done by the applicant."

The discovery of oil was made in a well begun by the Pacific Midway Oil Company long after the withdrawal order of September 27, 1909, the Government claims.

The Government has not sought to deny this patent upon the ground that the claim was transferred before the actual discovery of oil.

The recommendations of the Register and Receiver of the Land Office at Los Angeles, dated July 28, 1914, asked that the charge be dismissed and that the amended application for patent be accepted and filed, and the patent to the land be issued. This decision of the Los Angeles office is over-ruled by the Commissioner of the General Land Office and upheld by the Secretary of the Interior.

MAN WITH EXTENDED WESTERN EXPERIENCE HEADS LAND OFFICE

Clay Tallman, Farmer, School Teacher, Miner and Lawyer, Well Fitted for Important Post

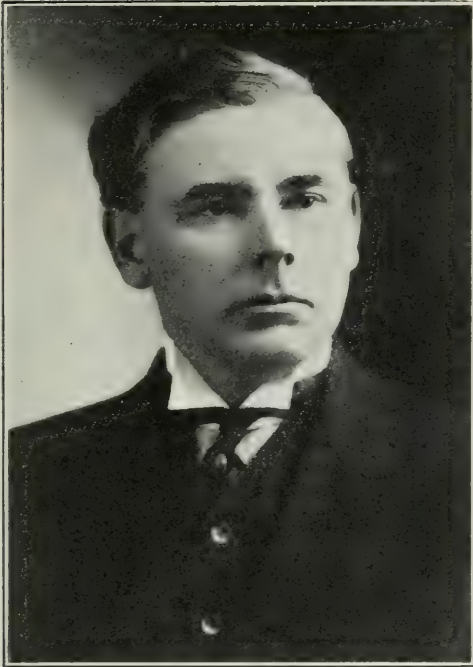
A self-made man of exceptional ability is the Commissioner of the General Land Office, Clay Tallman, who has occupied this position since 1913. He is thoroughly familiar with the West. He was one of the pioneers at Bull Frog and Rhyolite, Nev., and has seen the rise and fall of half a dozen camps. In addition he has an intimate knowledge of conditions in New Mexico, Colorado and California.

Mr. Tallman was born on a farm in Ionia County, Mich. Rocks and mortgages were the chief characteristics of the particular farming district in which Mr. Tallman was born and reared. As a result he learned early in life the meaning of gruelling labor. Hardships and self-denial were part of his day's existence for many years. In addition to the heavy work allotted to him, he managed to attend school during the short winter term.

Following the completion of his common school course, he attended the Michigan Agricultural College where he was graduated in 1885. Following this he served as the principal of a Michigan high school for a short time, and then went west.

He attended the University of Colorado, and later was superintendent of schools at Del Norte, Colo. Here he decided to take up the study of law, and returned to the University of Michigan law school, where he was graduated in 1904. He then went to New Mexico where he spent a year traveling about the state on professional business, looking principally into land matters.

When the mining boom was on in Nevada, he went to Bull Frog and Rhyolite where he became actively interested in a number of mining properties. He is responsible for bringing a large amount of capital into these camps. He



CLAY TALLMAN

Nevada Man who is Commissioner of the General Land Office

personally looked over much of the country in the Death Valley vicinity and knows what it means to live on the perimeter of civilization. During this entire time he was doing some work with his law practice. Finally he changed his residence to Tonopah and took up actively the practice of his profession.

In 1908 he was elected a member of the state Senate. During his two sessions in that body he was chairman of the judiciary committee, and was influential in putting on the statute books of the state as progressive legislation as that enjoyed by any commonwealth in the union.

In 1910 Mr. Tallman was elected chairman of the Democratic State Central Committee. He ran for Congress in 1912 and was defeated by sixty-nine votes.

The year following he was summoned to Washington as chief law officer of the Reclamation Service, from which position he was transferred to that of Commissioner of the General Land Office.

FIFTEEN MILLION ACRES ARE OPENED FOR SETTLEMENT

All records were broken during the last fiscal year in the making of surveys of public lands, according to reports submitted to Secretary Lane, by Commissioner Tallman, of the General Land Office. The total of ac-

cepted and approved surveys aggregated 14,339,349 acres. This was nearly double the amount surveyed during the preceding year, and 4,589,872 acres more than was surveyed in 1909, the previous high-record year.

The approval of the surveys opens up to settlement the land the surveys of which have been accepted. In the development of the western country particularly in the Rocky Mountain and Pacific Coast region, the demand by prospective settlers for land open to entry is very great. This demand has resulted in the extraordinary increase in the amount surveyed.

Secretary Lane regards the achievement of the Land Office as all the more noteworthy, because of the increased physical difficulties encountered in surveying virgin country in mountainous territory where the land on the lower levels already has been opened to settlement.

The surveys now are made not by the contract system with private surveyors as was the practice for half a century, but by the direct survey system put into operation two years ago whereby all of the 150 surveying parties are made up of regular employees of the Department of the Interior. Greater accuracy and efficiency have resulted from this system.

CALIFORNIA MOTHER LODE TO BE SUBJECT OF STUDY

The Mother Lode district of California is to be made the subject of special study, beginning this month. Special reference is to be paid to the gold quartz veins.

This work will be in charge of Adolph Knopf of the Geological Survey. One of the problems he will attempt to determine, is the changes, if any, that take place in ore bodies with depth. He also will attempt to ascertain whether any reason exists to expect other ore shoots below those known to exist.

GEOLOGICAL REPORTS FROM SOUTH AMERICA ARE HARD TO GET

Difficulty is being experienced in the library of the Geological Survey in obtaining copies of geological reports from South American countries. Just at this time, American geologists are paying a great deal of attention to South America, owing to the possibility of developing on that continent certain minerals which are needed urgently in the United States. The United States is interested, in a general way, in the development of American deposits of minerals for which it has been dependent upon Europe in the past.

To Testify at Phoenix

H. G. Ferguson, the geologist who sampled and examined contested mineral claims in the Grand Canyon district, will testify early in August, at a hearing which is to be held at Phoenix, Ariz.

HIGH FREIGHT RATES ON MINING RAILROADS IN NEVADA JUSTIFIED

Interstate Commerce Commission Rules in Goldfield Consolidated Mines Company Case—Gives Interesting History of Lines—Other Traffic News and Developments.

After long investigation concerning the reasonableness of freight rates from various points in the United States to points on certain railways in Nevada, the Interstate Commerce Commission has ruled in the case of the Goldfield Consolidated Mines Co. against the Southern Pacific, that the rates complained of are not unreasonable.

These salient facts are necessary to a thorough understanding of the ruling:

"There is practically no general freight traffic on the Tonopah & Goldfield R. R., Bullfrog-Goldfield R. R., Las Vegas & Tonopah R. R., and Tonopah & Tidewater R. R. north of Ryan, Cal., except the transportation of supplies to Tonopah, Goldfield, and Millers, Nev.

"The lines of these railroads pass through an arid and mountainous region barren of timber, and nearly devoid of other vegetation, with severe grades and difficult operating conditions."

REVIEWS CAMPS' HISTORIES

Commissioner Meyer, in discussing this case, says, in part:

All of these statements tended to show that the rates from California and from eastern points to Goldfield were upon a higher level than the rates to Arizona points referred to, and some of them were higher than the rates on corresponding articles to Ely and Austin, Nev., over equal or greater distances. Ely is the center of a copper mining district on the Nevada Northern R. R. This railroad extends in a southerly direction from Cobre, Nev., a point on the Southern Pacific Co.'s line 646 miles east of San Francisco, to Ely, a distance of 140 miles. Austin, Nev., is a point on the Nevada Central R. R. This road extends in a southerly direction from Battle Mountain, on the Southern Pacific Co.'s line, 477 miles east of San Francisco, to Austin, a distance of 93 miles. A statement was offered showing the elevations of the various summits crossed on the line of the Nevada Northern R. R., but no testimony was introduced showing the transportation or traffic conditions on the Nevada Central R. R.

Tonopah and Goldfield are mining camps about 30 miles apart, located in the western part of Nevada in the midst of a wide region with practically no present agricultural possibilities. Tonopah is served by the Tonopah & Goldfield R. R., which extends from Goldfield through Tonopah to Mina, a distance of 160 miles, where it connects with the Southern

Pacific line. This section of the Southern Pacific line extends from Hazen, Nev., a point on that company's line 289 miles east of San Francisco and 138 miles north of Mina, in a general southerly direction through Nevada and California, and connects with the Southern Pacific Co.'s main line in southern California at Mojave, 532 miles south of Hazen.

Goldfield is served by the Tonopah & Goldfield R. R., which hauls traffic into that camp from the north in connection with the Southern Pacific line, and is served also by the Bullfrog-Goldfield R. R., which extends in a southerly direction from Goldfield to Beatty, Nev., a distance of 79½ miles. At Beatty this road connects with the Tonopah & Tidewater R. R., which extends in a southerly direction 168 miles from Beatty to Ludlow, at which point it connects with the Atchison, Topeka & Santa Fe R. R., hereinafter called the Santa Fe. At Beatty connection is also made with the Las Vegas & Tonopah R. R., extending from Beatty in a southeasterly direction 118.4 miles to Las Vegas, Nev., where connection is made with the San Pedro, Los Angeles & Salt Lake R. R., hereinafter called the Salt Lake line. Both Tonopah and Goldfield are, therefore, served by competing routes from California points and from the east.

SILVER DISCOVERED

Much could be said of the prospects that induced the building of each of these lines. A silver mine was discovered at Tonopah in the latter part of the year 1900. During 1901 the discoverer of this mine permitted lessees to operate on various parts of the property, and a very large amount of ore was taken out. Tonopah was then 60 miles from the nearest railroad, a narrow-gauge line then known as the Carson & Colorado R. R., extending from a point on the Virginia & Truckee R. R., about 40 miles south of Reno, Nev., to Keeler, Cal. This railroad is now a part of the Southern Pacific system. Ore had to be hauled by wagon to the railroad and thence shipped to mills or smelters at or near Salt Lake City or San Francisco. Only the most valuable ore was of sufficiently high grade to bear the high transportation charge.

The lessees, therefore, piled upon the dumps a large quantity of ore that either had to await the construction of mills or the establishment of a cheaper method of transportation. There were no mills in Tonopah at that

time and the immense ore tonnage then in sight and the prospective tonnage from the development of this mine and others soon discovered, the rapidly increasing population, and the large amount of building necessary to house that population were the principal inducements to the building of the first railroad.

COMPLETED IN 1904

The Tonopah R. R. was completed from Mina to Tonopah July 4, 1904. It was a narrow-gauge line about 70 miles long and is said to have cost \$993,000.

Gold mines were discovered at Goldfield in the fall of 1903, activities began in 1904, but the real rush did not take place until 1905. The migration of men and money into this section of Nevada for the development of these mines is said to be without parallel in the history of mining development in the West since the first discovery of gold in California. The lessees on the various properties in Goldfield had to haul their ore to Tonopah, the then nearest railroad station. The rich ore veins and prospective tonnage, the rush to Goldfield, and the extraordinary building activity, all combined to induce the building of the extension of the Tonopah R. R. to Goldfield. This was completed into Goldfield in 1905. The Tonopah R. R. was reconstructed into a standard-gauge line and the two were consolidated under the name of the Tonopah & Goldfield R. R. At about the same time the line of the Southern Pacific Co. from Mina north was made a standard-gauge railroad. A cut-off, known as the Hazen cut-off, was constructed from Churchill to Hazen and a through standard-gauge railroad was for the first time in operation from California and eastern points to these mining camps.

The tonnage and travel over the Tonopah R. R. during the 16 months of its operation as a narrow-gauge road was so great as to tax its capacity to the utmost, and its net income during the period named was sufficient to pay for more than one-half its original cost. The population of Goldfield during the years 1905 and 1906 was estimated at approximately 20,000 people. Tonopah had a population of nearly 10,000, while the outlying mining districts that drew their supplies from or through these camps had a population of at least 10,000 persons. In the vicinity of Beatty and Rhyolite, 75 miles south of Goldfield, many promising mines had been discovered, and important development work was going on. In this district alone prior to the building of any railroad to that point probably 10,000 persons had established at least a temporary residence. A large amount of lumber for building purposes, supplies for mines, and the necessities of life for the persons who had flocked into the district were being hauled by wagon from Goldfield or from Las Vegas, and the confidence of the mine operators in the value and future of these mines was almost unlimited. Under these circumstances the Bullfrog-Goldfield R. R. was projected and built from Goldfield to Beatty and Rhyolite in the winter of 1905-6.

While the promoters and builders of this road were in large part the same men who had constructed the Tonopah & Goldfield R. R. and held a large interest in that road, the Tonopah & Goldfield R. R. Co. took no part in the construction, financing, or subsequent operation of the Bullfrog-Goldfield R. R.

OUTLET FOR BORAX

The Tonopah & Tidewater R. R., extending from Ludlow to Beatty, a distance of 168 miles, was completed in December, 1907. This road was constructed primarily to furnish a rail outlet for the borax deposits in Death Valley, Inyo County, Cal. These deposits are reached through a short branch line from Death Valley Junction, a station 37 miles south of Beatty. The borax deposits on this line had been developed many years before, and prior to the time of the building of the railroad a very large tonnage of borax had been produced and hauled out by teams. There were also deposits of talc, clay, and silica that promised to furnish a considerable tonnage. The mines near Beatty, the strong demand for transportation facilities to transport lumber and supplies thereto, and the prospective ore tonnage were the inducements that brought about the extension of this road to Beatty.

The Las Vegas & Tonopah Railroad was completed from Las Vegas to Beatty, 119 miles, in October, 1906, and to Goldfield in October, 1907. The promoters and builders of this road were the same men who built and controlled the Salt Lake line. The Salt Lake line runs, for the most part, through an exceedingly barren and sparsely settled country in Utah, Nevada, and California. Its traffic was very light, and the tremendous mining development and influx of population into these mining camps of western Nevada offered a strong inducement to the owners of this property to try to secure some of the traffic in ore and supplies then offered and in prospect.

DID OWN CONSTRUCTION

The Las Vegas & Tonopah Railroad was constructed under the direct control of the officers of the corporation and its employees. No contracts were let except contracts for grading. The book cost of the construction of the line from Las Vegas to Beatty was \$1,148,309.15, and of the part of the line from Beatty to Goldfield, \$1,692,753.82. Stock to the amount of \$1,500,000 was issued and sold at par and notes of the company were given for the balance, amounting to approximately \$1,341,000. Neither interest nor any part of the principal has ever been paid on any of these notes up to the present time.

The Bullfrog-Goldfield Railroad was constructed by the Armagosa Construction Company under a contract with the railroad company under the terms of which there were delivered to the construction company \$1,992,500 in the capital stock of the railroad company and \$1,500,000 first mortgage bonds and \$184,000 bills payable, in consideration of which the construction company turned over to the railroad company a completed line of railroad 79

miles long, extending from Goldfield to the vicinity of Rhyolite, with sidetracks, stations, terminals, and equipment, and a considerable amount of materials and supplies and other property. The record does not disclose whether or not the officers and directors of the construction company were the same as of the railroad company for whom the railroad was built. The road has never paid its operating expenses, and the deficiency has been made up each year by the controlling corporation, which is the Tonopah & Tidewater Railroad Company.

The Tonopah & Tidewater Railroad was built by the railroad company itself, and no contracts were let except for some grading in the Armagosa Canyon, where certain heavy work was encountered which required more stock and equipment than the railroad company possessed. The total original book cost as reported by the railroad company was \$3,573,673.67. Bonds were issued for 675,000 pounds sterling, and the cash realized from the sale of these bonds, amounting to \$3,285,344.10, built and equipped the road. While this road has been able to earn enough to pay its operating expenses, it has not been able to meet its interest obligations since 1908, and the deficiency has been paid each year by the Borax Consolidated Company of London. This company has guaranteed the bonds of the railroad company. The largest deficiency for any one year was \$100,609.84, in 1911, and the smallest deficiency was \$25,140.89, for the fiscal year of 1913. The annual interest on the bonds of this road amounts to approximately \$150,000. About two-thirds of this interest has been paid by the railroad company and one-third by the borax company, guarantor of its bonds.

BUILT BY MINING COMPANY

The Tonopah Railroad was built by the Tonopah Mining Company, at that time owning and operating the principal mine in Tonopah. The president of the mining company was also the president of the railroad company, and was a director in both companies. The extension of the road from Tonopah to Goldfield was constructed by the Pacific Construction Company, and was then called the Goldfield Railroad. The stock in the construction company was all held by three men, and these men were all stockholders and directors of the Goldfield Railroad. The Goldfield Railroad and the Tonopah Railroad merged their properties into what is now the Tonopah & Goldfield Railroad.

The total book cost of the Tonopah Railroad as it stood at the time of the consolidation was \$1,476,000, and the book cost of the Goldfield Railroad was \$1,110,000, making the total book cost of the Tonopah & Goldfield Railroad approximately \$2,586,000. Twenty-one thousand five hundred shares of stock were issued in the name of the company of the par value of \$100 per share, and bonds were sold to the amount of \$1,017,000. The total capitalization as represented by the stock and bonds of the company amounted to \$3,167,000.

From October, 1907, to July, 1914, two parallel lines of railroad, the Las Vegas & Tonopah and the Bullfrog-Goldfield, were

operated from Beatty to Goldfield. In July 1914, a consolidation was effected by which one of these lines was abandoned and the traffic of the Tonopah & Tidewater and of the Las Vegas & Tonopah is now brought to Beatty and from that point hauled over the line of the Bullfrog-Goldfield Railroad to Goldfield. It is expected that this consolidation should result in a considerable saving in operating expenses. During the years 1911, 1912, and 1913 neither the Bullfrog-Goldfield nor the Las Vegas & Tonopah received enough revenue from operation to pay operating expenses and taxes, and the Tonopah & Tidewater Railroad has not since 1908 earned sufficient revenue to pay its operating expenses and fixed charges. The deficiency of the Las Vegas & Tonopah Railroad has been paid by its stockholders, that of the Bullfrog-Goldfield by the Tonopah & Tidewater, and that of the Tonopah & Tidewater Railroad by the Borax Consolidated Company.

ONLY ONE PAYING

The only one of these four roads that has been able to return any dividends to its stockholders is the Tonopah & Goldfield Railroad. This road has been able to pay and return dividends to its stockholders of $5\frac{3}{4}$ per cent. during the years of its operation, and to retire, through its sinking fund provision, approximately 60 per cent. of the bonds outstanding at the time of its completion. Its total outstanding bonded debt is now \$400,000. All of these roads are almost entirely dependent on the operation and development of the mining industries in the territory which they serve. The total irrigated and cultivated area along the lines of these four roads, comprising 500 miles of line, does not exceed 500 acres of land. There is no timber along any of these lines and very little stock. Most of the country traversed is not adapted to stock raising on account of the scarcity of water, the small rainfall, and arid climate. The sparsity of traffic on the lines south of Goldfield is shown by the fact that the mixed train from Las Vegas to Beatty, which runs six times a week, averages from eight to eleven passengers and from one to three carloads of freight, and returns with a like number of passengers and almost no freight whatever. The trains on the Tonopah & Tidewater Railroad carry about a like amount. The total tonnage handled by the Las Vegas & Tonopah Railroad during the month of October, 1914, was 2,891 tons, and by the Bullfrog-Goldfield Railroad, 2,888 tons. The average tonnage per train was 57.8 tons.

The greatest tonnage handled by the Tonopah & Tidewater Railroad during any one year was 77,548 tons, or an average per train of 124 tons, and the smallest tonnage was 52,924 tons, or 85 tons per train. More than one-third of the tonnage handled by this road is borate, the crude rock from which borax is made. This is mined at Ryan, Cal., about 37 miles south of Beatty. The Tonopah & Goldfield Railroad is the only one of these four roads that handles any great amount of ore tonnage from either Tonopah or Goldfield. The mill used by the Tonopah Mining Company is situated at Millers, 11

miles from Tonopah, and the ore is hauled by rail to this mill. The revenue derived from the haul of this ore during the fiscal year 1914 was approximately \$144,000, or 21 per cent. of the total operating revenue of the road. The total tonnage of freight, exclusive of ore, moved by the Tonopah & Goldfield Railroad during the fiscal year 1914 was 70,844 tons, or 113 tons per train each way for each working day. The freight business is practically all moving in one direction, and the trains return to Mina almost without load.

FEW ACCIDENTS

The record shows that these roads have been subjected to certain accidents, washouts, and fires, but none of very great consequence.

The direct effect of an order of the Commission was to reduce the rates from California points to points in Nevada, but owing to the fact that many rates from eastern points were made by combination over San Francisco, Sacramento, or Los Angeles, reductions were thus brought about from eastern points to this territory. The various orders of the Nevada Railroad Commission have also had the effect of reducing the rates on some of these railroads. A rather notable case is one concerning the rates on forest products from Verdi, Nev., to Tonopah and Goldfield, which resulted in very material reductions in the rates on mining timbers and other lumber.

The scale of wages paid to all the employees of these roads, with the exception of the general officers, is from 25 to 65 per cent. higher than the average upon all railroads in the United States. The scale of prices which all of these employees and all other persons residing in these mining camps have to pay for the necessities of life is materially higher than in other parts of the United States. This makes necessary a corresponding increase in the compensation paid to labor of all kinds.

OUTLOOK NOT BRIGHT

The outlook for the future from the development of new business for these roads is rather gloomy. As before stated, there is little agriculture and no timber along these lines. The country is so arid that without water to irrigate it is almost impossible to produce a crop. There are no streams of any consequence in this territory. A few flowing wells have been developed near Las Vegas, but the results from the use of this water have so far been of small importance. These roads are dependent for traffic upon mining industries in the country traversed by them. The lives of silver or gold mining camps in that state have always been limited. The towns of Rhyolite and Beatty in 1907 had a combined population of probably 10,000 people. Their population now is estimated at 300. As previously stated, Goldfield had a population in 1907 variously estimated at from 15,000 to 20,000 persons. The population now is said to be approximately 5,000. Tonopah had a population in 1907 of nearly 10,000 people, while the present population is not more than half that number. Nearly the same proportionate shrinkage has taken place in the popula-

tion of the other outlying mining camps of Silver Peak, Manhattan, and Round Mountain. Sooner or later the ore will become exhausted, and unless new ore bodies are discovered the mills will be dismantled and the population will in large part move away. The railroads built primarily to serve such camps as these can hope for only a limited lease of prosperity. They prosper only while the camps prosper, and the decline of the camps means the decline of the roads. The Tonopah & Tidewater, the Las Vegas & Tonopah, and the Bullfrog-Goldfield entered these camps too late to enjoy the full tide of prosperity, which began to wane in the fall of 1907.

The Tonopah & Goldfield Railroad Company had two or three very prosperous years. Its present revenues, however, are not excessive, and its management asserts that all possible economies are being observed consistent with the quality of service demanded and furnished.

JUSTIFIES COAL RATES

Commission Upholds Carriers in Illinois— Omaha Charges Case.

In the matter of the coal rates from Illinois mines to Omaha, Neb., and other points, the Commission ruled that the proposed increase from \$2.05 to \$2.25 per net ton on the rate for bituminous coal, from points on the Southern Railway in the Belleville, Ill., district, to Omaha and points grouped therewith, is justified. The Commission says:

"The Belleville district in Illinois comprises an area extending for some distance north, east, and south of East St. Louis. The producing points involved are located along the St. Louis-Louisville divisions of the Southern Railway in that district. The northern section of the Belleville district overlaps the southern section of the Springfield group of points. A rate of \$2.05 applies from the Springfield group to the destinations involved. The current rate of \$2.05 from the lower section of the Belleville group, effective September 28, 1914, involved generally a reduction from \$2.25, which represented an increase effected after various fluctuations, in 1909. For some time the Southern Railway carried the \$2.05 rate in connection with the Rock Island and Burlington lines, respectively. Its withdrawal in 1909 was at the request of the Rock Island and the Burlington. A rate of \$2.40 applies from Southern Illinois mines, south of the Belleville district.

"The Wabash was prompted to join with the Southern in the \$2.05 rate because its equipment, used to move grain eastward from the Omaha market, was returning light and the development of coal tonnage for the westbound movement was desirable. It did not appreciate, however, that the reduction would disturb the adjustment of coal rates from Illinois to Omaha. Admittedly the maintenance of the reduced rate would, on the basis of the present differences, result in lowering the rate from Springfield to \$1.85 and from southern Illinois to \$2.20, while the other Belleville district lines presumably

would insist on carrying a rate of \$2.05 from other districts. Rates of \$2.05 from the Springfield group, \$2.25 from the Belleville group, and \$2.40 from southern Illinois, although not consistently maintained, are considered by the Wabash and the intervening lines to represent the normal basis. The Belleville group rate is composed of a proportional rate of 25 cents to East St. Louis and a local rate of \$2 from East St. Louis to Omaha; the southern Illinois rate of a proportional of 40 cents to East St. Louis and the \$2 local rate beyond. A bridge charge of 20 cents over the Mississippi River is absorbed by the Wabash. The revenue of the Southern is the same whether the rate is \$2.05 or \$2.25—\$1.80 per ton. We held that the \$2 rate was not unreasonable. The interveners insist that the practical question before us is whether or not the conditions have changed since 1910. It is idle to argue that the Commission did not consider the through charge of \$2.25 as a reasonable rate for the through transportation. The division of the joint rate accruing to the Southern Railway from its mines to East St. Louis is the same, 25 cents, under the present and proposed rate, and therefore the question is narrowed to the reasonableness of the rate beyond St. Louis, already held reasonable. The Wabash Railroad does not reach mines in the inner group; the Southern Railway serves only mines in that group. The latter road, therefore, has no interest in the differential to be maintained between the outer and inner groups. The contention of the interveners that the maintenance of the present rate will disrupt and depress rates from other fields appears to be satisfactorily established, and upon all of the facts of record we find that the proposed increased rate is justified and our orders of suspension will, therefore, be vacated as of August 1, 1915."

Attack Colorado Coal Rates

A brief setting forth alleged inequalities and unfairness in Colorado coal rates has been filed with the commission, in the case of the South Canon Coal Company and the Grand Junction Mining & Fuel Co. v. the Colorado Midland et al.

The complainants operate mines at South Canon and Cameo, Colorado. They produce high grade bituminous coal, similar to that produced in Walsenburg and Routt counties, Colorado. Companies operating in these counties are alleged to pay lower freight rates, which amounts to a discrimination against the complainants, it is alleged.

Grasselli Company Wins Case

Reparation has been granted to the Grasselli Chemical Company in its case against the Baltimore & Ohio Railroad.

To Hear Hauto Case

A hearing in the matter of allowances on anthracite coal at Hauto and Nesquehoning, Pa., will be held September 9 at Philadelphia, before Examiner Gibson.

Dismiss Coal Case

After careful consideration of the complaint filed by the Monongahela River Consolidated Coal & Coke Co. v. the Union Railway, the Commission has decided that all points in the case are covered in the decision, referring to allowances to lines of railway serving industries. For this reason the complaint has been dismissed.

Grant Rehearing

Permission to reopen the case of the Reeves Coal Company v. Chicago & Milwaukee Railway, has been granted. The rehearing requested by the Reeves Company against the Chicago and Great Western has been denied.

POTASH IN SPAIN ATTRACTS ATTENTION OF OUR AUTHORITIES

With a fertilizer famine threatening American farmers as a result of the cutting off of supplies of German potash, officials of the State and Commerce departments have undertaken to arrange for the development by American capital of a potash deposit recently discovered in Southern Spain. A concession contract from the Spanish Government already has been laid before interested firms, who are expected to act shortly.

The world supply of potash has been dominated by a German combination controlled by the Imperial Government, which since the war began has declined to release exports. Three cargoes of the product already loaded on ships for the United States and paid for in advance have been held up in German ports for several months.

American commercial representatives abroad recently directed attention to the Spanish deposits, which are near Barcelona, with the information that capital for their development was not available in Spain.

Lloyd is Promoted

The place made vacant on the coal board and the land classification board of the Geological Survey by the promotion of C. E. Leshner, has been filled by the promotion of E. Russell Lloyd. Mr. Lloyd has been working in the geological branch of the fuel section of the Survey for the past four years. He is a native of West Virginia. Mr. Lloyd is a graduate of Oxford University, England, the Ohio-Wesleyan, and the University of Chicago.

WHERE IS ENGLISH ANTIMONY COMING FROM? MANY INQUIRE

Embargo Precludes Exports from Great Britain—Mexico May Be Source of Supply, it is Suggested

It is a matter of some speculation in Washington as to how standard English antimony continues to reach the American market in seemingly abundant quantities. The exports from England and all English colonies were cut off at the beginning of the war. Despite the heavy demand for antimony which has resulted in this country, the English article continues to be sufficient to supply the trade.

Antimony is used principally at present in the treatment of lead for hardening purposes, necessary for the projectiles contained in shrapnel shells.

In some quarters it is suggested that the antimony may be coming from Mexico. So far as it is known, there is but one antimony smelter in Mexico and it never had produced the finished product. There is some suggestion that this smelter, which is owned in England, may have changed its process of treatment.

It is also suggested that other plants for treating antimony may have been built in Mexico since the war.

M. Elasser has a plant at San Pedro, California. It is understood that the work being done there at this time is experimental. In view of the amount of the finished product on the market,

it has been suggested that this plant may not be engaged entirely in experimental work. Considerable secrecy seems to be maintained around the San Pedro plant.

Work East of Uinta Mountains

Examination of phosphate bearing beds in the Uinta mountains is being conducted by A. R. Schultz of the Geological Survey. The examinations are being made east of the mountains. It has been impossible to re-examine the beds on the flanks of the Uinta mountains near Vernal.

Canada Issues Many Reports

During recent weeks the Canadian Department of Mines, has been prolific in its distribution of reports. Principal among them are, "Coal Fields of Manitoba, Saskatchewan, Alberta and Eastern British Columbia," by D. B. Dowling, and a preliminary report upon "Clay and Shale Deposits of the Province of Quebec" by J. Keele.

Brooks Leaves for Alaska

Dr. A. H. Brooks, in charge of Alaskan mineral resources, sailed from Seattle, July 15, on the steamship Jefferson for Alaska, to take personal charge of the work being done there. Dr. Brooks was preceded by a number of geologists and their parties.



PHOTOGRAPH TAKEN RECENTLY AT THE LITTLE RIVER ROADHOUSE, ALASKA—A TEAM OF THE ALASKAN RAILWAY COMMISSION IS SHOWN ON THE RIGHT

RULINGS OF STATE TAX COMMISSIONERS HELD TO BE FINAL UNLESS FRAUD IS SHOWN

Board Passing on Assessments Bears Same Relation to Public as do the Courts
of Law—Cost of Mining and All Other Features Must be
Considered in Valuation—Other Legal Decisions

An assessment of mining property for taxation cannot be said to be fraudulent although excessive, where the State Board of Tax Commissioners did not act in reckless disregard of duty and in opposition to what must necessarily be the judgment of all competent persons, and where, in fixing the value of a mine the state board used the information produced for it by disinterested experts of high standing in accordance with authority granted by an act of the Legislature of the state. And while the sum fixed may be too high or too low, the assessment cannot be changed where the tax commissioners, one of whom was familiar with the development of iron mines and the particular formation, acted honestly, fairly and in good faith upon all the information at hand, made a proper and legal assessment in fixing the value of the mine in controversy, and the assessment so made must be taken as conclusive and binding.

Sunday Lake Iron Company *vs.* Wakefield Township, (Michigan) 153, Northwestern, p. 14.

FRAUD ONLY PLEA

In a suit to declare void assessments of mining property the court will not consider complaints as to results reached by the State Board of Tax Commissioners, except such as are based upon fraud or the adoption of a fraudulently wrong principle, as the state has confided these rights to the protection of the State Board of Tax Commissioners and has trusted to its honor and capacity, in the same manner as it confides the protection of other social relations to the courts of law.

Newport Mining Company *vs.* City of Ironwood, (Michigan) 152 Northwestern, p. 1088.

METHODS OF VALUATION

The statute direction as to the taxation of mining property is that the quality and value of minerals, when known to be available therein, must be considered by the tax assessors in determining the value of land for taxation; but a number of factors have to be considered in determining whether, it being apparent that there is a deposit of ore in a given locality, it is available where there is no mine or mining carried on, and this availability, its commercial value and the ease and cost of mining, must be considered as well as the quality and quantity of the ore body. Another factor is the price to be paid per ton during the conducting of mining operations, or a variable price depending upon the quantity or selling price of ore mined or shipped or both, considering the expense of opening the mine, of conducting mining operations and the royalty, if any, to be paid; but

for purposes of taxation the state is not bound to accept the amount of royalty bargained for by the land owners as controlling its valuation of the land.

The method of assessment is not difficult where a mine is open and in operation, and where with the equipment at a given rate of mining, the ore body in sight would be exhausted in a determinable period, but the value for assessment purposes would be more difficult as to the quantity of ore not in sight, in considering the present value of the land, but if as to this the method adopted was not wrong in principle, and was according to the methods of business to ascertain such values, where a rule or method exists by which engineering and business men ascertain the value of the ore bodies for the purpose of buying and selling them, the state through its taxing officials is justified in using similar methods in ascertaining values for taxing purposes.

Newport Mining Company *vs.* City of Ironwood, (Michigan) 152 Northwestern, p. 1088.

WISCONSIN LAW

The Wisconsin law of 1913 (Chapter 367), relating to the taxation of mineral rights, must be treated as a tax statute enacted for the purpose of raising revenue for governmental purposes, and as including in its scope all cases by which exception, reservation or expressed grant, the title to ores or minerals in the land; together with the right of exploring for and mining the same, are vested in some persons other than the owner to the title of the land and its beneficiary used for any and all other purposes.

The existence or value of ores or minerals beneath the surface undisclosed is not easily ascertainable, and this distinction cognate to the purpose of the statute which would support the discrimination found in the statute requiring such owner to furnish the assessor his affidavit of value, while the owners of other estates in the same tract of land are not required to do so; this classification of itself would not render the statute invalid under either the Federal or State Constitution, but another provision of the statute limiting the bidders in case the mining property is offered for sale for delinquent taxes, to the state or county, or the persons owning the remaining interest in the land, renders the act unconstitutional, as this provision is not only not germane to but in contravention of the very purposes of the statute, and discriminates injuriously against the owner of mining property, and such a classification, with reference to bidders at tax sales, is wholly arbitrary and without legal foundation.

State *vs.* Donald, (Wisconsin) 153 Northwestern, p. 238.

LIABILITY FOR ASSAULT

A mining corporation which stations at its mine men and employes and other agents for the purpose of guarding and protecting its property, is liable for an assault committed by such person or agents upon a person upon the public highway.

Pennsylvania Mining Company *vs.* Farnigan, (Pa.) 222 Federal, p. 889.

LIABILITY FOR INJURY

A mining corporation is not liable for an injury to an experienced miner, caused by an explosion of powder in the process of mining, on the ground that the steel can in which the miner kept his powder was in a damp place in the mine and that because of the dampness of the powder it failed to explode at the proper time, but was exploded on a day following by the miner's pick.

Lehigh Valley Coal Company *vs.* Calausky, (Pa.) 222 Federal, p. 664.

LIABILITY FOR NEGLIGENCE

A fire boss in a coal mine in Pennsylvania is a state official and where it appears that he does not represent the mine operator in any respect or perform any duties except those imposed upon him by statute, he cannot bind the mine operator by any statements or representations as to the conditions or safety of the mine or of the methods of storing and using explosives.

Lehigh Valley Coal Company *vs.* Calausky, (Pa.) 222 Federal, pp. 664-666.

MANDAMUS

An applicant for a certificate as a mine inspector under the Pennsylvania Act of June 8, 1901 (Pennsylvania Laws, 535), cannot by mandamus compel the board of examiners to issue a certificate where the petition does not allege that the petitioner answered ninety per centum of the questions stated in his written examination, and fails to aver that the petitioner passed a successful examination, and states no fact which, if true, would show fraud or misconduct in the refusal to award him a certificate. The board of examiners may in such case exercise discretion in performing their duties and at least four of them must be convinced that the applicant has passed a satisfactory examination before he is entitled to a certificate of qualification, and if these refuse, it is the end of the matter, and mandamus does not lie.

Reese *vs.* Pollard, (Pa.) 94 Atlantic, p. 246.

California Miners Give \$1,000

The California Metal Producers' Association has contributed \$1,000 for the third annual joint field meet of the Bureau of Mines, and the American Mine Safety Association, to be held at San Francisco, September 23-24, 1915. This

meet will be preceded on September 22, by a California first-aid contest.

LAND OFFICE SELECTS MEN FOR COAL WORK IN ALASKA

George W. Evans, of Seattle, has been selected by the General Land Office to take charge of the mining engineering portion of the General Land Office work in the Behring River coal field.

Sumner S. Smith of the Bureau of Mines staff, has been selected for the same work in the Matanuska field.

UTAH COAL MINES HAVE ANOTHER REMARKABLE YEAR

With their production of coal valued at \$5,000,000 for 1914, Utah mines again have established a remarkable record, according to figures just compiled by C. E. Lasher, coal statistician of the Geological Survey.

CHEAP PETROLEUM HURTS ALABAMA COAL BUSINESS

Due to the supplies of petroleum in the South, and to the low price which has been prevailing for coal, there was a slight decrease in 1914 of the Alabama production. Figures just made public show the 1914 production amounts to 15,593,422 tons, valued at the mine at \$20,849,949. This is a decrease of 11.8 per cent. in quality and 9.06 per cent. in value, as compared with 1913. Disturbed conditions in Mexico affected the consumption of coal in that country. During the year, 3,940 days' time were lost by miners through strikes.

GEOLOGICAL SURVEY WATCHING CLOSELY FOR NITRATE FINDS

Constant watch is being maintained for nitrate or potash deposits. The people of the United States will be benefited by the discovery of any new deposits in this hemisphere. For this reason the Geological Survey is taking particular note of any reported discovery in South American countries.

OUTPUT OF METAL MINES IN THE EAST TOTALS \$11,437,707

Eighty-one metal mines operating in the eastern States mined products valued at \$11,437,707 in 1914, according to the Geological Survey. Of this number forty-five were gold placer mines, thirty-six were deep gold mines, seven were zinc and seven copper mines. Many of the gold placers have very low production, but nevertheless were operated at a profit.

The total gold output was valued at \$173,589. This is an increase over the 1913 production. The average recovery of gold per ton, from siliceous ore treated, was \$4.69.

Practically all of the copper mined in the eastern States comes from Tennessee. The total output was 19,555,362 pounds.

Zinc is mined in New Jersey, Virginia, New Hampshire and Tennessee.

LIFE LOSS IN MINES HAS DOLLARS-AND-CENTS VALUE OF \$90,000,000 IN TEN YEARS

**Consumers Pay This Big Item Added to Cost of Coal Production—Bureau of Mines
Does Effective Work in Lowering Number of Accidents**

While hundreds of thousands of men are being slaughtered in the great European war, and when the ingenuity of man in foreign countries is taxed to the utmost to devise yet more frightful engines for killing men, it is in striking contrast that the United States Government announces through the Bureau of Mines that preparations are being made to hold in San Francisco a great national demonstration in the saving of human life and in alleviating the sufferings of those who are injured in the pursuits of peaceful industry.

The third national mine safety meet in behalf of the army of more than a million miners is to be held at the Panama-Pacific exposition grounds, September 23 and 24, under the auspices of the Bureau of Mines, the American Mine Safety Association and the California Metal Producers Association. During that week, the American Institute of Mining Engineers, an organization of 5,000 members, and the American Mining Congress, a national body of several thousand members, will hold their annual meetings at the exposition and will join in the safety demonstration, which promises to have as spectators the largest gathering of mining men ever assembled in the United States.

FIFTY TEAMS TO ENTER

It is expected that more than fifty teams of miners from all over the United States, trained in rescue and first-aid work, will be present to compete in the several events. Gold medals are to be awarded by the American Mine Safety Association for interstate supremacy in rescue and first-aid work and silver and bronze medals by the American Red Cross Society to teams that make creditable showings. In addition there will be special medals and prizes to be competed for by groups of states, such as the Southwestern states, the Rocky Mountain states, the Pacific coast states and the Southern states.

Already miners all over the country are preparing for the great national meet. Both rescue and first-aid teams are in training in many mining communities and certain states and groups of states are holding elimination contests so that they may be represented at San Francisco by the strongest possible teams. Six Southwestern states, Texas, Arkansas, Oklahoma, Kansas, Missouri and Iowa, have already held state meets and they are now preparing to hold an interstate meet in Kansas City in July. The Southwestern Interstate Coal Operators Association is managing this interstate meet and expects to have 10,000 persons present. The winning team at Kansas City is to be given \$1,000 as a prize to defray its expenses to San Francisco and return.

The annual meeting of the American Mine Safety Association will be held at Birmingham, Ala., September 4, and this will be the occasion of the Southern Interstate contest in first aid and mine rescue, the winning team to be sent to San Francisco. One of the big coal-mining companies in Illinois and another in the Poca-hontas field of West Virginia have already made arrangements to send teams to compete in the events. The Homestake Mining Company of Lead, S. Dak., will also send an individual team. It is further expected that there will be three teams each from the states of Colorado, Montana, Wyoming, Utah and New Mexico, five each from the states of Arizona, Nevada and Washington, and a dozen teams from California. Where a state is represented by more than one team, there will be elimination contests on the first day of the meet, September 23, and the winners of these contests will meet the eastern teams the next day for interstate supremacy.

That the miners have a problem on their hands is seen in the death statistics for the mines. In the year 1913, the last year for which statistics are available for all the mines and allied industries, 3,762 men were killed and 177,000 injured. This includes coal mines, metal mines, quarries, ore-dressing plants and smelting plants.

TWENTY-SIX THOUSAND DIE

In the last ten years, in the coal mines alone, there have been 26,000 deaths, a fatality rate of three and three-quarters men in every 1,000 employed, and more than a million men injured.

It was to reduce the death-rate and lessen the number of injuries that the Federal Government early in 1908 took up its work in behalf of the miners. The first marked progress was in 1911 when the first national mine safety demonstration was held in Pittsburgh, Pa., in the presence of the President of the United States and 20,000 miners. Since that time there has been a wonderful development throughout the country in both rescue and first-aid work.

IN DOLLARS AND CENTS

"No one likes to estimate the money value of a human life," said Van H. Manning in discussing this phase of the work, "but at times it becomes necessary to do this, especially in working out the economics of compensation acts. It is a reasonable estimate that during the past ten years more than 30,000 men have been killed in connection with the accidents in the mining industries of this country. It is impossible to estimate the number injured or who have suffered from bad health conditions. It is impossible to estimate the number of men with health shat-

tered through these conditions who have had to give up their work years before their natural time or the number of dependents who have suffered thereby.

"If it is assumed that each human life lost is valued at \$3,000, it will be seen that the deaths alone in the mines have cost in the ten years \$90,000,000.

"As to the metal mines, metallurgical plants and quarrying operations, unfortunately there are few reliable data regarding health conditions in the United States; yet there are sufficient isolated figures concerning certain districts to indicate that the death-rate from occupational diseases is even greater than the accident rate."

BUREAU OF MINES EXPERT AIDS POLICE IN BOMB CASE

It is interesting to know that the Washington police turned to the Bureau of Mines immediately upon learning that a bomb had been exploded in the Capitol, just after the explosion had taken place. It was very necessary to establish at the very earliest possible moment whether it was the result of an accumulation of gas or other accidental cause.

Dr. C. E. Munroe, who has charge of the chemistry of explosives for the Bureau of Mines, made an investigation. Long before Holt's confession he determined that the explosion was due to a dynamite bomb.

MINING CONGRESS ALWAYS READY TO HELP MEMBERS

Any member of the American Mining Congress is entitled to apply to the Washington office for any service which can be rendered. Matters will be laid before any department or will be taken up with the White House. Oftentimes more can be accomplished by personal interviews than by correspondence.

Washington has a wealth of reference facilities. These are at the service of the members of the American Mining Congress if anyone will acquaint the secretary with his desires.

The staff of the Washington office is always at your service.

A. G. MACKENZIE IS SELECTED AS UTAH CHAPTER SECRETARY

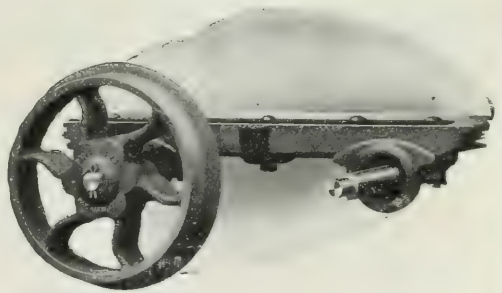
The Utah Chapter of the American Mining Congress has elected A. G. Mackenzie as its secretary. Mr. Mackenzie is a very capable man and is thoroughly familiar with mining conditions in Utah.

The Utah Chapter promises to accomplish much in the state and to add not a little to the strength of the national organization.

Issues Work on Unemployment

"Unemployment" is the subject of a voluminous work by the American Association for Labor Legislation. While mining is not treated separately, many of the principles and conditions surrounding employment in mines are discussed.

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DO YOU KNOW WHAT THE GOVERNMENT IS DOING TOWARD AIDING THE VERY KIND OF WORK IN WHICH YOU ARE ENGAGED?

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First—Safety and efficiency in mining operations.

Second—Intelligent conservation with a view to the highest development and use of our mineral resources.

Third—The stimulation of investment in practical mining operations by showing that mining is a legitimate business when intelligently conducted.

Fourth—Uniformity in state laws governing mining operations carried on under like conditions.

Fifth—Such federal co-operation through research and investigation as will furnish the basis for intelligent state legislation, and will solve those problems of economical production, treatment and transportation which are essential to an increase in mineral production.

Sixth—The improvement of the economic conditions underlying the coal mining industry.

If you are interested in this work, now is the time to help; do not wait until those who are now carrying the burden have become discouraged.

The appended application blank will show the way. Come in and bring the neighbor who should join this movement. Mail application to

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.....191.....

I hereby make application for membership in THE AMERICAN MINING CONGRESS and agree, if accepted, to abide by the By-Laws, Rules and Regulations of said organization and to pay the dues required by same.

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THE MINING CONGRESS JOURNAL

SEPTEMBER

CONTENTS

1915

Program Eighteenth Annual Convention....	419	Central Coal and Coke Co., Kansas City, Mo.....	496
Van H. Manning Named Director of Bureau of Mines.....	423	Dickson and Eddy, New York.....	418
Immigration Will Be Heavy After War....	424	Du Pont Powder Co., Wilmington, Del....	498
Mining Congress to Meet in Memorial Auditorium.....	425	Disston and Sons, Henry, Philadelphia....	500
Guide Books Complimented.....	426	Diester Concentrator Co., The, Ft. Wayne, Ind.....	497
Tin Smelter to Blow in January 1.....	428	Electric Storage Battery Co., The, Philadelphia.....	503
Peril Seen in Present Metal Prices.....	429	Fairbanks, Morse and Co., San Francisco..	503
Accurate Estimates Made.....	430	Goodman Manufacturing Co., Chicago, Inside Back Cover.	
President Scholz Discusses Mining Congress Plans.....	431	Goodrich, The B. F., Co., Akron, Ohio....	417
Land Classification Board Busy.....	432	General Electric Co., Schenectady, N. Y...	501
Pan American Scientific Conference.....	433	Hercules Powder Co., Wilmington, Del....	416
New Data on California Copper Region....	435	Heller and Brightly, Philadelphia.....	497
Foundation Laid for Uniform State Laws...	437	Irvington Smelting and Refining Works, Irvington, N. J.....	492
Points Way to New Oil Field.....	438	Improved Combustion Co., Chicago.....	492
Holmes Memorial To Be Considered.....	439	Ingersoll-Rand Co., New York.....	508
Pennsylvania's Tax Laws.....	441	Jeffrey Manufacturing Co., Columbus, Ohio, Outside back cover.	
Molybdenite Buyers.....	442	Justrite Manufacturing Co., Chicago.....	505
Grateful for Arizona Work.....	443	Longyear Co., E. J., Minneapolis.....	492
Topographers' Work Aids Miner.....	444	Link-Belt Co., Philadelphia.....	505
Mine Taxation in Arizona.....	447	Morgan Gardner Electric Co., Chicago, Inside Back Cover.	
Zinc Importers Discuss Duty.....	448	Mining Safety Device Co., Bowerston, Ohio.	491
Recent Legal Decisions.....	451	Ohio Drilling Co., The, Massillon, Ohio....	492
Mining Patents.....	453	Ohio Brass Co., The, Mansfield, Ohio....	497
Bureau Work in Oil Fields.....	457	Phillips Mine and Mill Supply Co., Pittsburgh.....	491
Colorado Leads in Gold Production.....	460	Pennsylvania Drilling Co., The, New York.	492
Editorials.....	461	Phelps Dodge and Co., New York.....	492
Traffic Developments of the Month.....	473	Professional Directory.....	493
Mineral Land Decisions.....	478	Rock Island Lines.....	489
Outstanding Withdrawals.....	483	Roessler and Hasslacher Chemical Co., The, New York.....	495
Libraries Search for Technical Papers.....	487	Susquehanna Coal Co., Philadelphia.....	490
Personals.....	488	Streeter-Amet Weighing and Recording Co., Chicago.....	497
		Thorne, Neale and Co., Philadelphia.....	418
		Vulcan Iron Works, New York.....	500
		Wilmot Engineering Co., Hazleton, Pa., Inside Front Cover.	
		Whitney and Kemmerer, New York.....	490

INDEX TO ADVERTISERS

American Mine Door Co., The, San Francisco, Inside Front Cover.	
Aetna Explosives Co., New York.....	416
Allis-Chalmers Manufacturing Co., Milwaukee, Wis.....	507
Burton Powder Co., Pittsburgh, Pa.....	416
Bartlett, The, C. O., and Snow Co., Cleveland, Ohio.....	417
Baldwin Locomotive Works, Philadelphia..	494

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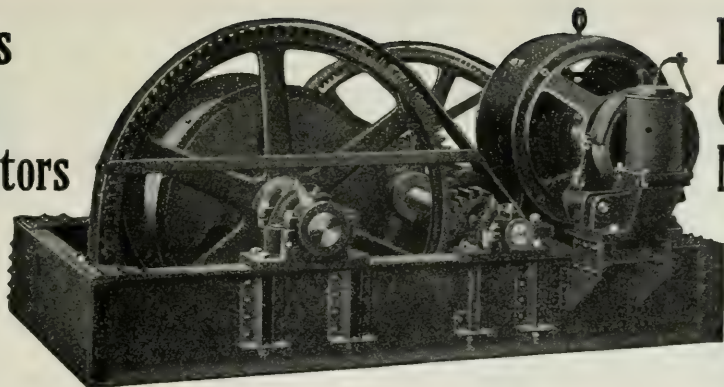
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PROVISIONAL PROGRAM

SUBJECT TO REVISION

Eighteenth Annual Session

OF

The American Mining Congress

SAN FRANCISCO, CALIFORNIA

September 20-22, 1915

OFFICIAL HEADQUARTERS AT THE PALACE HOTEL

*Where registration desk will be open until Monday noon—thereafter at the
Exposition Memorial Hall.*

MONDAY, SEPTEMBER 20

MORNING SESSION

10.00 A. M.

Opening session, Exposition Memorial Auditorium.

Invocation.

Synopsis of President's annual address, CARL SCHOLZ, Chicago, Ill.

Two-minute responses from representatives of such States as desire opportunity
to express a word of greeting to fellow members of the Convention.

Selection of Committee on Resolutions.

Disposition of Program. (It is proposed that the Convention itself shall decide
upon the time for the discussion of each subject, and that those who are
willing to attend such discussions shall fix the time. It is hoped by this
plan that no speaker will be called upon to address empty seats, while the
Convention members are inspecting the Exposition.)

Adjournment.

AFTERNOON SESSION

2.00 P. M.

(Unless otherwise ordered by the Convention the following program will be
carried out.)

Introduction of Resolutions.

Address—"What the United States Bureau of Mines is Doing and Hopes to Do
for the Metalliferous Mining Industry"—VAN H. MANNING, *Director U. S.
Bureau of Mines.*

Address—"Plain Writing"—DR. GEORGE OTIS SMITH, *Director U. S. Geological
Survey.*

Discussion.

Address—"Federal Influence in the Settlement of Industrial Disputes"—DR.
MARTIN D. FOSTER, *Congressman from Illinois, Chairman House Committee
on Mines and Mining.*

Discussion.

Adjournment. (No evening session.)

TUESDAY, SEPTEMBER 21

MORNING SESSION

10.00 A. M.

Introduction of Resolutions.

Final Report of Committee on Prevention of Mine Accidents—DR. W. R. INGALLS, *Chairman*, New York City.

Report of Committee on Uniform Mine Reports—SAMUEL A. TAYLOR, *Chairman*, Pittsburgh, Pa.

Report of Committee on Alaskan Affairs—FALCON JOSLIN, *Chairman*, Fairbanks, Alaska.

Report of Committee on Revision of Mineral Land Laws—E. B. KIRBY, *Chairman*, St. Louis, Mo.

Discussion under five-minute rule.

Paper—"Rights of Way Over the Public Domain"—HON. CHARLES S. THOMAS, *United States Senator from Colorado*.

Address—"The Right of Appeal from Decisions of the Interior Department in Cases Where the Government Is Charged with an Interest"—H. H. SCHWARTZ, Portland, Oregon.

Discussion—State versus Federal Leasing of Natural Resources Where Government Control Is Essential to Public Welfare.

Statement by the Secretary, followed by open discussion under five-minute rule.

Report of Committee on Resolutions.

12.00 NOON.

Memorial Exercises

in honor of

DR. JOSEPH A. HOLMES,

Late Director of the United States Bureau of Mines, chief inspiration of mine safety work in the United States, publicist, humanitarian, public servant, who wore out his life in the services of his fellowmen.

(Speakers to be selected.)

Report of Committee on Testimonial to Dr. Holmes.

Adjournment.

AFTERNOON SESSION

2.30 P. M.

Address—"California's Water Infiltration Law"—FLETCHER MCN. HAMILTON, *State Mineralogist*, San Francisco, Cal.

Discussion—THOMAS A. O'DONNELL, Los Angeles, Cal.; W. W. ORCUTT, Los Angeles, Cal., from the standpoint of the oil operators; RALPH ARNOLD, Los Angeles, Cal.; HARRY R. JOHNSON, Los Angeles, Cal., from the standpoint of the geologist.

EVENING SESSION

7.30 P. M.

Meeting of members for the election of Directors and general discussion of the affairs of the organization.

WEDNESDAY, SEPTEMBER 22

MORNING SESSION

10.00 A. M.

Introduction of Resolutions.

Report of Committee on Resolutions.

Report of Committee on Workmen's Compensation—J. W. DAWSON, *Chairman*, Charleston, W. Va.

Report of Committee on Freight and Ore Treatment Rates—IMER PETT, *Chairman*, Salt Lake City, Utah.

Paper—"The Development of Mine Taxation in Arizona"—G. H. DOWELL, Bisbee, Arizona.

Report of Committee on Mine Taxation—D. L. WEBB, *Chairman*, Denver, Colo.

Address—"Mining on Government Indian Reservations"—F. LYNWOOD GARRISON, Philadelphia, Pa.

Address—"Workmen's Compensation Insurance and the Coal Mining Industry"—HERBERT M. WILSON, Pittsburgh, Pa.

Address—"The New Plan of Mining Insurance"—DAVID ROSS, Springfield, Ill.

Address—"Mining Hazards on the Pacific Coast"—DR. F. L. HOFFMAN, Newark, New Jersey.

Discussion under five-minute rule.

AFTERNOON SESSION

2.00 P. M.

Report of Committee on Mining Investments—W. R. ALLEN, *Chairman*, Butte, Montana.

Address—"The Iron Resources of Utah"—PROF. FRED J. PACK, Salt Lake City, Utah.

Address—"The Future of the American Zinc Industry"—OTTO RUHL, Joplin, Missouri.

Address—"Interesting Phases of the Anthracite Coal Mining Industry"—DR. E. W. PARKER, Wilkes-Barre, Pa.

Address—"Federal Control of the Coal Mining Industry," including a discussion of the Sherman Law, the Clayton Bill, and the Federal Trade Commission—RUSH C. BUTLER, Chicago, Ill.

Discussion under the five-minute rule—Led by W. L. SAUNDERS, New York City.

Final Report of Committee on Resolutions.

Adjournment.

WEDNESDAY EVENING

A complimentary banquet will be tendered to Mr. Van H. Manning, the new Director of the United States Bureau of Mines. All mining men will be welcomed.

(Arrangements for invitations may be made at the office of the Secretary at the Convention headquarters, Palace Hotel.)

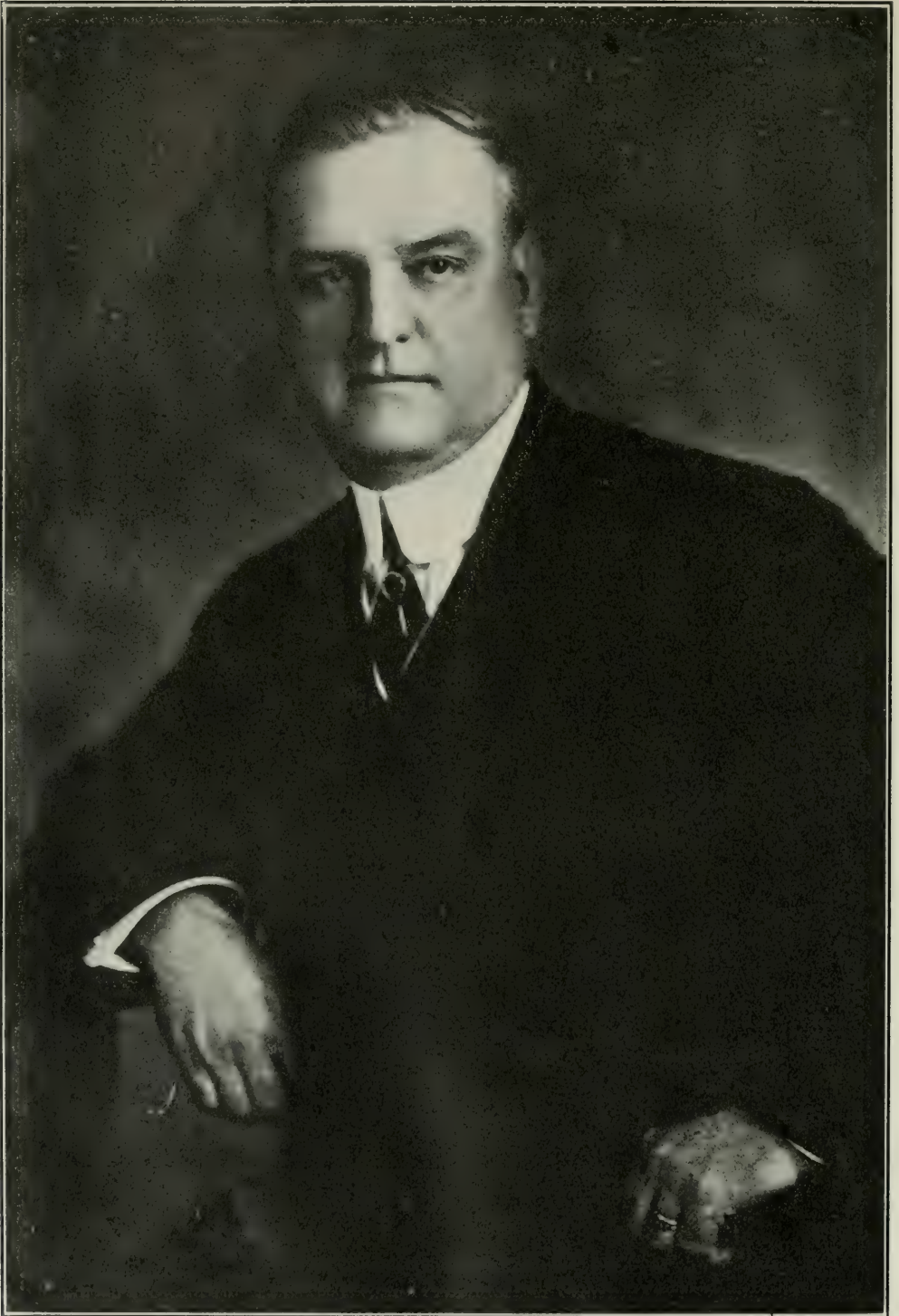
GENERAL STUDY ON ENRICHMENT OF SILVER ORES COMPLETED

E. S. Bastin has completed a general study of the enrichment of silver ores. Upon his return from California recently, he stopped at Virginia City, Nev., and made a study of the ores from the famous Comstock lode.

In this work he is cooperating with Dr. Chase Palmer, of the Geological Survey.

Gypsum Report Completed

The report upon gypsum, stone, lime, sand and gravel has been completed for insertion in Mineral Resources in 1914.



VAN H. MANNING, DIRECTOR UNITED STATES BUREAU OF MINES

THE MINING CONGRESS JOURNAL

Official Organ of the American Mining Congress

PRESIDENT WILSON CHOOSES VAN H. MANNING AS DIRECTOR OF BUREAU OF MINES

After the Secretary of the Interior had Considered the Names of Many Applicants He Recommends Promotion of Assistant Director—New Bureau Head Well Known to Mining Men of Country

On the recommendation of the Secretary of the Interior, President Wilson on August 27 named Van H. Manning director of the Bureau of Mines, to succeed the late Dr. Joseph A. Holmes.

Since the death of Dr. Holmes there has been considerable speculation as to his successor. A number of candidates for the directorship of this important bureau were suggested to Mr. Lane. Among this number were several men very prominent in the mining world. Mr. Manning did not apply for the post. Secretary Lane recommended him after having given full consideration to all others whose names were brought to his attention in this connection.

During the time of Dr. Holmes's protracted illness, Mr. Manning was in charge of the Bureau of Mines, of which he had been assistant director since January 1, 1911. During this time Mr. Lane had ample opportunity to familiarize himself with his abilities.

Following the announcement of Mr. Manning's appointment many telegrams and letters began to reach his office congratulating him on his promotion. These communications were from State geologists, State mining inspectors, the technical press and a large number of personal friends. In addition he was felicitated by the American Mining Congress, The American Institute of Mining Engineers, The American Chemical Association, The American Mining and Metallurgy Society, The American Federation of Labor, The United Mine Workers and other organizations.

Mr. Manning was born at Horn Lake Depot, Miss., December 15, 1861. He is the son of the late Van H. Manning, Sr., who

formerly represented the second Mississippi district in the House of Representatives.

He was graduated by the University of Mississippi with the degree of bachelor of arts. Later he was appointed from Mississippi to fill the place of topographic assistant on the Geological Survey. This was on February 1, 1886. The remuneration for this service was \$600 a year. After a few months he was made assistant topographer.

He was promoted to the rank of topographer July 1, 1889. He continued as a topographer, with various increases in salary until July 20, 1910, when he was transferred to the newly created Bureau of Mines as chief clerk. The following January Secretary Ballinger named him acting director of the Bureau. The following year he was appointed assistant to the director. Since January 1, 1914, he has been in active charge of the Bureau owing to the illness of Dr. Holmes.

During his service with the Geological Survey Mr. Manning has done topographic work in nearly every State in the Union. This gave him an opportunity to become widely acquainted with mining men throughout the United States. His first work was done in New England. In 1885 he was a member of the S. H. Bodfish's party, which did work in the New England division. The following year he worked with Mr. Bodfish and his party in Massachusetts. The next season was spent in Arkansas with the party of Topographer Blair.

He took charge of his first party in 1888 and directed a survey in southern Wisconsin. For the next five years he continued his Wisconsin work. Later he had charge of a party in North Dakota. In 1895 he was transferred

to the Indian Territory division. He continued in this work through the field season of 1898. In 1899 he made his headquarters at Spokane in charge of work being done in Washington and Idaho. The next three years he spent in mapping the Coeur d'Alene mining district of Idaho and Montana.

In 1903 he had charge of work in the following quadrangles in Ohio: New Metamoras, Athens, Cutler, Dayton, Lima, Mount Sterling, Orland, Springfield, Tiffin, and Sycamore. The following year he was section chief in charge of the work in Missouri and Arkansas. His principal work was done at Forsyth, Farmington, Potosi, Mo., and Harrison, Ark. In 1905 he was section chief in charge of the Southeastern States. His principal work was done at Charlotte, N. C.; Yorktown, Buchanan and Fincastle, Va.

During the field season of 1905 Mr. Manning stayed in Washington as chairman of the committee on per diem.

The natural bridge section of Virginia received his attention in 1906. In 1907 he had charge of the Central City (Ky.) sheet. He also supervised the southern section of the Atlantic division of topography. From 1907 to July, 1910, he was a member of the business committee of the Geological Survey.

Work in the Tallahatchie drainage basin, Mississippi, in 1908 was put in charge of Mr. Manning. In the same year he did the mapping of the Atlantic City harbor. His last work with the Geological Survey was a map of the Alamo National Forest of New Mexico.

ENGLISH PUBLICATION COMMENDS BUREAU OF MINES REPORTS

Publications of the Bureau of Mines have called for the following reference by *Science and Art of Mining*, an English publication of distinction:

The United States Bureau of Mines, with a regularity worthy of commendation, supplies to American miners and officials information that cannot fail to assist in the good working of the pits. Miners' Circular No. 21 is intended to show "What a Miner Can Do to Prevent Explosions of Gas and of Coal Dust." Some of the suggestions are based upon American practice, but are of general interest.

United States Producing More Graphite

Graphite is being produced in increasing quantities in the United States. The production in 1914 was over 4,000 tons, valued at \$300,000. Graphite is produced in New York, Pennsylvania, Alabama, and Montana.

California Leads Gold Producers

California mines produced more gold in 1914 than those of any other State. The output also is the greatest yielded by the mines of California since 1864, with the single exception of the year 1883. During 1914 California produced \$20,563,496 worth of gold. The value of the copper output during that year was \$4,057,523. The silver output is valued at \$813,938.

There were 658 mines operating during that year, of this number 340 were placers.

IMMIGRATION WILL BE HEAVY AFTER WAR, DECLARES AUTHORITY

Emigration from Europe will be heavy after the war, according to Gino C. Sperenza, of the Society of Italian Emigrants of New York.

Mr. Sperenza bases his conclusion upon the fact that impoverished and tax-burdened Europe will be unable to compete with American wages. This will result in the emigration of large numbers of laborers from all countries, and particularly Italy.

He points out that Italy is accustomed to sending 1,000,000 of her children annually to foreign labor markets.

He also contends that the war will leave great masses of men, who have been raised by their trying experiences to a new outlook on life. They will not be content to begin the daily struggle for existence in their own stricken lands where opportunity will be limited. Many men who are timid and stay-at-homes by nature, will have changed into daring and adventurous spirits by their terms of enlistment in the army.

He predicts that many of these will make America their mecca.

BUREAU OF MINES PERMIT GIVEN MANNESMANN LIGHT

The Bureau of Mines has approved for safety, practicability and efficiency in general service the miners' portable electric cap lamp known as the Manlite No. 8 lamp. It is manufactured by the Mannesmann Light Company of America, 331 Fourth Avenue, New York, N. Y.

The only bulbs so far approved for use with these lamps are the bulbs identified by the symbol "C-5," manufactured by the Mannesmann Light Company of America.

This lamp will be distinguished by a plate bearing the seal of the Bureau of Mines.

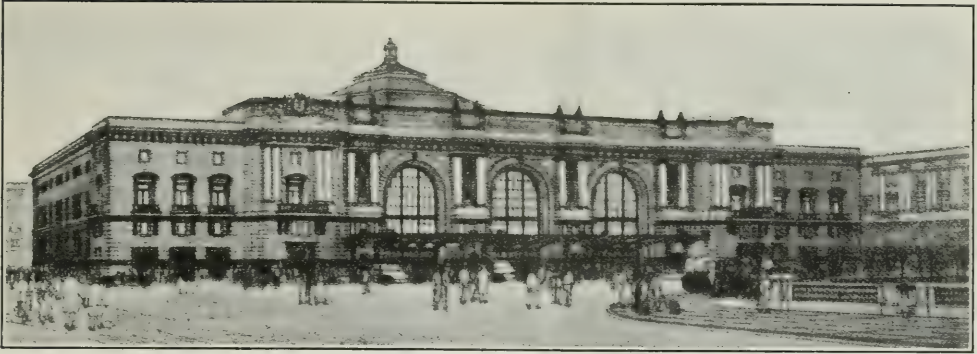
Editor Pleased with "Journal"

The August issue of the MINING CONGRESS JOURNAL was the subject of complimentary editorial comment by the *Kingman (Ariz.) Miner* in its issue of August 14. The editorial is as follows:

"One of the best issues of the MINING CONGRESS JOURNAL is the August number. It contains so much news of interest to the mining man that he should see that it is in his possession at once. If there is anything that should bring a miner into the fold of the American Mining Congress it is this magazine. It is worth in each issue far more than the yearly dues of the Congress."

Make Studies in Florida

Studies of the physiography of the deposition of sediments along the Florida coast and the continental shelf are being made by F. W. Vaughn and E. W. Shaw.



HALL IN WHICH MINING CONGRESS CONVENTION WILL BE HELD

MINING CONGRESS TO MEET IN MEMORIAL AUDITORIUM

**Magnificent Building Will House Twenty-One Conventions at Once—Building
Cost \$1,250,000**

The Exposition Memorial Auditorium occupies the entire block, bounded by Grove, Larkin, Hayes and Polk Streets, forming a part of the Civic Center, with the City Hall and other monumental public buildings grouped around an impressive area. This Civic Center group is located at a central point in the city, easily accessible from all sections and directly adjacent to Market Street, the wide thoroughfare leading to the gateways of the city—the ferry and steamship terminals on the water front. From the western boundary of the Civic Center, the Van Ness Avenue Municipal Street Railway leads direct to the amusement section of the Exposition. The trip from the auditorium to the Exposition grounds by street railways will take less than fifteen minutes.

The auditorium was erected by the Exposition for the special use of the congresses and conventions to meet in San Francisco in 1915. The building, with equipment, cost \$1,250,000. The lot on which the auditorium is built was provided by the city at an additional expense of \$701,000. Following the close of the Exposition on December 4, 1915, the auditorium will be given to the City of San Francisco as a permanent memorial of the Exposition.

The auditorium has eleven halls, each with a seating capacity of from 400 to 10,000 people. In addition to the eleven halls there are nineteen rooms suitable for committee meetings or meetings of small convention sections, each of the nineteen rooms seating from 30 to 125 people. By a system of rolling partitions the four large halls on the third and fourth floors may be converted into a maximum of fourteen halls, each with a minimum seating capacity of 250 people. With the rolling partitions in use it would be possible to hold in

the auditorium at the same time twenty-one conventions, each with an attendance of from 250 to 10,000, and nineteen committee or section meetings, each with an attendance of from 30 to 125.

The building has an exterior appearance expressing its purpose and suited to its position in this group of important public buildings. The front is of stone with a large triple entrance feature with elaborate carved stone decoration and an ornamental marquise over the entrance doorways. The central portion of the building has a pyramidal tile roof with an ornamental lantern at the apex. Provision is made for exterior decorative lighting, particularly in the main arched entrance feature and on the roof.

The building is four stories high, the central portion containing a large auditorium extending through the four stories. This auditorium has a main floor 190 by 190 feet at the street level. Wide corridors surround it on all sides, except at the rear, where there are entrances directly to the street. Above the main auditorium floor there is a large balcony around three sides, extending over the corridors and other rooms on the ground floor. There are ample exits from the balcony to the corridors at the different floor levels and fourteen wide stairways extend from these corridors to the main floor, besides two passenger and two freight elevators, which run the whole height of the building; in addition, two freight elevators run from the main auditorium floor to the basement.

The interior wall and ceiling surfaces of the main auditorium are treated in an architectural and decorative manner, the ceiling following the lines of the polygonal roof with the steel trusses exposed to view, thus adding to the architectural effect. The large skylight at the top of the pyramidal roof furnishes light to the interior, and electric lights distributed on the ceiling and walls give the necessary artificial lighting.

The auditorium is entered through large vestibules and a wide corridor forming an entrance foyer. In the rear of the auditorium opposite the entrance forming a balcony, and

adjacent to the auditorium on each side a speaker's room convenient to the side corridors with entrances from the street and stairways to the upper floors.

The seating capacity of the main auditorium is estimated at 5,000 for the ground floor and 5,000 in the balcony.

In addition to the main auditorium, there are ten halls suitable for congresses and conventions. On the first floor there is a large hall on each side of the auditorium, extending through two stories, and treated in a decorative manner with beamed ceilings and with pilasters on the walls. These two halls, each 56 by 137 feet, have an unobstructed floor area like the large auditorium and each has nine entrances or exits leading directly to the street, with nine other entrances to a wide corridor extending from front to rear of building with exits and entrances to the street at each end. In front of each hall a large lobby leads to the wide corridor or foyer extending along the front portion of the building and directly opposite the lobby are main entrances to the building. A large reception room is located adjacent to the lobby and in the rear of each hall there are committee rooms each 16 by 34 feet. These committee rooms on the first floor are adjacent to the stairway to the second floor, where there are two other committee rooms. These two halls on the first floor are provided with moving-picture operating rooms fully equipped for operating moving-picture machines and stereopticons, with provision at the opposite end of each hall for screens for pictures.

The third and fourth floors have each two large halls 58 by 138 feet, with two committee rooms adjacent. By the use of rolling partitions, each of the two large halls on the third floor may be divided into two smaller halls, seating about 500 and 700, respectively. By the use of rolling partitions each of the large halls on the fourth floor may be changed into five smaller halls, each seating about 250 people. The two large halls on the fourth floor are lighted by skylights in addition to the window lighting. The third and fourth floors have also two halls each 41 by 64 feet directly connected with the larger upper halls and to the main corridor, stairways, etc., so they may be used independently.

The basement contains a kitchen and locker rooms, besides large storage spaces, lavatories for men and women, and other conveniences. There are lavatories for both men and women on all the floors above the basement, and on the second floor there are large reception rooms, retiring rooms, etc., for women. Ten checking spaces on the first floor and sixteen on the second floor, equipped with counters, racks, etc., give ample facilities for checking purposes.

All of the rooms in the building are well lighted by electricity. Provision is made for intercommunicating telephone service, call bells, etc. Heating and ventilation are supplied by fans in the basement furnishing fresh

warm air to all the rooms in the most approved manner, the fresh air taking the place of the air removed from the rooms by exhaust fans on the roof.

GEOLOGIC GUIDE BOOKS CALL

OUT COMPLIMENTARY COMMENT

Many letters have been received by the Geological Survey commenting favorably on the geologic guide books. "Chimmie Fadden" says: "The guide book is the most interesting public document I have ever seen."

Professor Chamberlin says: "I think it will prove a great hit. I congratulate you."

Still another variety of comment comes from a Wyoming Senator, who, in asking to have copies sent to half a dozen of his friends, said: "I want them to feel grateful, as I do, that we do not have to 'meet up' with such creatures as those depicted, who lived in the Miocene and Oligocene epochs, in our daily travels about the State."

The New York *Press* says editorially: "The notion of a government printing guide books for tourists seems a bit strange for a moment, but after all, why not? Surely every nation wishes its own citizens to take proper pride in the wonders and beauties of their own land. Nothing could better serve the end of creating closer bonds of understanding among the inhabitants of all sections than the encouragement of travel. This is good politics, considering politics in the broader, better sense. Then it is sound economics to encourage those with money to spend on recreation and education to spend it at home. So the United States Geological Survey in publishing a guide book of the Western United States has done an admirable thing.

"But this guide book is remarkable from another point of view. Besides giving all the vivid history of the West and an interesting survey of its industries and resources, the book explains scientifically, yet in entertaining style, the geological history of each region. The traveler sees petrified trees, balanced rocks, table rocks, cliffs and deserts from his car window. Uncle Sam tells him why they are as well as where they are. In respect of this, and because of its accuracy, the book surpasses anything in the way of a travel guide ever before attempted in this country."

"Know America First" gets official impetus.

"PERHAPS THE GREATEST ADVANTAGES OBTAINED FROM A CONVENTION OF MEN IN THE SAME INDUSTRY ARE THE INFORMAL CONFERENCES THAT TAKE PLACE BETWEEN INDIVIDUALS."

MINING CONGRESS CONVENTION PRESENTS UNUSUAL OPPORTUNITIES THIS YEAR

Coming Meeting in San Francisco the Most Important Held in History of Organization—Weighty Problems Facing Industry to Come Up for General Discussion—Prominent Men Will Speak

Never before has the annual convention of the Mining Congress offered the inducements for attendance as is the case this year, according to a Mining Congress official.

"The meeting at San Francisco, September 20-22, will be the most important convention in the history of the Congress. This is due to some extent to the fact that other scientific conventions the same week will insure the assembling of a great number of distinguished men who are interested directly and indirectly in mining," he says.

"Due to the war in Europe, mining has been given an expected impetus in this country. It has called attention to the necessity of America being minerally independent. After the lesson of the last year, there is no question that every effort will be bent to produce in the United States minerals for which we have been depending on Germany.

"Congress is about to reassemble. A variety of questions of greatest importance to those who operate mines will come up. Many of these questions are to be discussed at the Mining Congress Convention.

"Action will be taken there which will indicate the legislative steps desired by mine owners.

"By consulting the program which appears elsewhere in this issue, it will be noted that representative men will speak on matters of the most vital interest to the convention.

"One of the greatest advantages of any convention is the opportunity offered for exchange of views between individuals. Some who have studied the matter claim the most good accomplished by an assembly of men engaged in the same industry is the informal conferences that take place between individuals. Many of the problems presented in mining are common to a number of operators. An exchange of ideas and methods of working often result in much more successful work.

"The Panama-Pacific Exposition, with its extensive mineral exhibits, alone is sufficient inducement to draw the great majority of mine operators to the fair. Hundreds of mining men have timed their visit to the fair so as to be able to attend the Mining Congress Convention.

"As I said before, there will be a representative gathering of mining men. They

will discuss more important problems than ever before have faced the industry. To miss this year's convention will be almost a calamity to any mine operator."

CHEMICAL ASSOCIATION MEMBERS HAVE SUCCESSFUL CONVENTION

Members of the American Chemical Association combined pleasure and business in attending their convention in Seattle August 31 to September 2. Members of the association, with their families, left Chicago August 26 and traveled via St. Paul to Glacier Park. They made the automobile trip to St. Mary Chalets. This included a night and a portion of two days at the Many Glacier Hotel.

The party arrived in Seattle August 30. The convention was well attended and is reported to have been a splendid success. Leaving Seattle the night of September 2, the trip to Mount Rainier National Park was made via Tacoma. A day was spent in the park. One-half day was spent in Tacoma on their return from Mount Rainier. September 4 was spent in Portland.

Practically all members of the party extended their trip to San Francisco, where they arrived September 6.

BUREAU OF MINES CHEMISTS AID ORDNANCE OFFICIALS

Chemists of the Bureau of Mines have been called upon by the War Department to assist ordnance officials in experiments with regard to the relative sensibility of certain types of explosives. The Bureau's experts have gone into the matter with great thoroughness and have written a 55-page manuscript covering their research.

AMERICA'S MOST REPRESENTATIVE MINE OPERATORS WILL ASSEMBLE AT SAN FRANCISCO SEPTEMBER 20-22.

LEAN PORTIONS OF ZINC MINES BEING WORKED—RICH ORE FOUND

Lean portions of the zinc mines through the country are being worked as the result of the high price of spelter. This is resulting in much advantageous development work and has led to the discovery of a number of high grade ore bodies. C. E. Siebenthal, of the Geological Survey, just has returned from field work in the Joplin and Miami district. He reports the greatest activity in the history of these camps.

"There are fifty churn drills going night and day in northeastern Oklahoma," says Mr. Siebenthal. "This prospecting is developing promising bodies of zinc and lead. With the coming of peace in Europe this fervor of development may decrease somewhat, but the chances are good for continued activity and sustained prices in zinc even after the war is over."

Mr. Siebenthal is working upon a mid-year report on zinc smelters. He also is writing a report on the origin of the zinc and lead deposits of the Joplin district.

TIN SMELTER AT PERTH AMBOY WILL BLOW IN JANUARY 1

Operations of the new tin smelter, being constructed by the American Smelting and Refining Company at Perth Amboy, N. J., will begin January 1, it is announced officially.

The company is now in the market for tin concentrates for the supply of this smelter.

The report that Williams, Harvey & Co., Ltd., of Cornwall, England, is interested in this smelter is denied by the American Smelting & Refining Company.

ALUNITE BEING STUDIED AS POSSIBLE POTASH SOURCE

A report is being prepared by G. F. Loughlin of the Geological Survey, covering alunite in Utah. Alunite is a possible source of potash and is attracting considerable attention at this time.

Considerable deposits of hydrous sulphate of aluminum and potash occur near Marysville, Utah. Some work is being done upon these deposits, but as yet none of the product has been marketed. Alunite is an important source of alum in several foreign countries.

SMAREKITE CONTAINS RADIUM, BUT IT IS VALUELESS

Inquiries to the Geological Survey as to the opportunities for marketing smarekite are responsible for the investigation of a possible market for this rare metal.

So far as the Survey is informed, or has been able to ascertain, there is absolutely no market for smarekite.

It contains 10 per cent. of uranium, and, so far as is known, the only possible value is for its radium contents.

The fact that this metal is found in such small quantities and the fact that it is very refractory to treatment lead to the conclusion that it has no commercial value.

The same is true of euxinite. This metal also contains radium, but as it requires a different mode of reduction than do other ores, there is little opportunity of its being found of value, unless much larger quantities are discovered.

UNCLE SAM is conducting a multitude of activities which have a bearing on mining. Men engaged in this industry cannot afford to be out of touch with this work.

The Mining Congress Journal, the official organ of the American Mining Congress, is covering the Washington field carefully in its news columns. It offers a ready means of keeping you informed as to the efforts of these things in time to counteract them.

The Mining Congress Journal covers Congress, the Bureau of Mines, the Geological Survey, the Interstate Commerce Commission, the Supreme Court, the Land Office, the Patent Office, the Department of Labor and the other Federal offices where the work affects the mine owner or operator. State mining legislation and current decisions are featured. There are many other interesting features as to mines in the Journal.

Can you afford to be without this service?



PERIL SEEN IN PRESENT STIMULATED METAL PRICES

Arizona Engineer Advises Preparation for Inevitable Slump—Better Relations With Labor Urged

Courtenay De Kalb, an able mining engineer and economist of Tucson, Ariz., looks beyond the period of stimulated metal prices and in a letter to the American Mining Congress sets forth some of his predictions. His letter is as follows:

DEAR MR. CALLBREATH:

I deeply feel the need of organized effort for the welfare of industry. This pertains to all industry; not alone to that one in which we are chiefly interested.

I feel that it is particularly the duty of those organizations that contemplate the protection and the even development of industry to take serious account at this time of measures that may avert future disaster. The extraordinary prosperity of the mining industry under the abnormal stimulus of a world war, which has not yet involved ourselves, holds a peril which we dare not blink, and which it behooves the American Mining Congress to consider carefully.

The fever of present production is certain to suffer the chill of unresponsive markets, no matter which nation or group of nations may carry off the victory. There will come a period of liquidation after the war, a prolonged epoch of disentangling the financial skein, before active repair of the waste of war can be undertaken. Those who look forward to immediate reconstruction on any scale adequate to absorb a large metal output are reckoning falsely. There will come a time when the laboring classes will beg for work as never before, and when no man can give it to them.

We are reaping a war harvest now, and it is our duty to consider ways and means for husbanding it against the time of stress.

The relations of capital to labor are always delicate. The need of bringing the two camps into close and sympathetic relations is always urgent. Today it seems more necessary to give it serious thought than ever. It is, however, precisely during periods of prosperity that the cordial relations established by abundant work and liberal pay should facilitate most a drawing together of capital and labor for effective team work in their industrial relations. Instead they drift apart in the spirit of careless spendthrifts, and then, when the days come when they feel the need of the help which each could render to the other, there is no sense of brotherhood to prevent social and economic difficulties.

It seems to me that here is a work which the Mining Congress might undertake, that possibly may assist in keeping the mining world in a healthier condition to face the

time of depression that is so sure to come. The American Mining Congress has been concerned chiefly with the operator's interests. It has drawn its membership from those whose interests are identified with the production of mineral wealth. It has not sufficiently taken into account the side of labor. Here is something omitted which should be made good. We can no more mine without labor than we can produce without mineral deposits. The conduct of mining operations is as much concerned with labor as with laws and vested rights. I am speaking as an operator in the interests of that other element whose importance we must consider, and whose interests we must safeguard. It would seem reasonable that we should appoint a committee, consisting of those who rightfully stand for labor within the Mining Congress, to represent labor and to encourage the entry of laboring men in large numbers into the membership of the Congress. Thus would the Congress become more thoroughly representative of the mining industry, and be able more adequately to fulfill its purpose. At the same time it would be proper to consider the special interests of capital through another committee; and perchance another committee representative of both labor and capital might consider those vital questions of cooperation which offer the surest means for harmonizing the interests of both which in the end will serve to keep industry from suffering disaster in times of national stringency.

There are many splendid examples of cooperation undertaken on individual initiative, but there has never been an attempt on a scale of national breadth to bring together constructively the members representative of the two fundamental branches of the mining industry to work out means for mutually protecting each other against economic waste and financial hardship. Here would seem to be a peculiar opportunity for the Mining Congress, since of all organizations within the mining world it pretends to be and is in reality the most democratic.

If these suggestions may bear fruit for the public welfare, I will be heartily glad.

COURTENAY DE KALB.

Tucson, Ariz., August 7.

BORING IN SEARCH OF POTASH OR NITRATES IS CONTINUING

Saline deposits in the red beds region of the Rocky Mountain states, Texas, and Oklahoma, continue the subject of general reconnaissance examination, with the idea of determining centers of greatest or perhaps complete evaporation of the red bed sands.

Boring in search of potash and nitrates in the pleistocene lake basins is continuing actively, at several points in the West. Drilling in the Smoke Creek desert also has been inaugurated.

ESTIMATE OF IRON ORE PRODUCTION MISSES ACTUAL QUANTITY MINED BY 239 TONS

**Geological Survey's Experts Make Accurate Forecasts of Mineral Production.
Quicksilver Output Estimate Is .999 Correct—Coal Figures Vary Four-
tenths of One Per cent.—Petroleum "Guess" Comes Close**

Director Smith has been checking up the first-of-the-calendar-year reports by the United States Geological Survey on mineral production against the detailed final figures received by the Survey from individual producers, and the result of this comparison leaves no doubt as to the essential value of the preliminary reports given to the press the first week of January.

In fact, some of the preliminary figures are so close to the final figures as to suggest to those who are fond of being critical of every endeavor of a Federal bureau that the final figures have even been doctored to correspond with the new year's estimates. For instance, E. W. Parker's estimate of the 1914 coal production was only four-tenths of 1 per cent. below the actual tonnage now known to have been mined in the United States during the year. Similarly J. D. Northrup, in tackling the more difficult matter of estimating the petroleum output, has discovered that his preliminary estimate of last January was 2 per cent. under the truth as now known. E. F. Burchard in estimating the production of the cement industry, with which he was fortunately in close touch, through the courtesies of the relatively small number of producers, came within three-tenths of 1 per cent. H. D. McCaskey, the present chief of the Division of Mineral Resources, made a preliminary estimate of the quicksilver production which is now found to be .999 correct.

The best record of all, however, was made by Mr. Burchard in connection with iron ore production. His estimate was based on preliminary reports from some fifty of the larger iron mining companies whose output the previous year had represented about 90 per cent. of the total tonnage. The preliminary figures given to the press last January stated that the "total quantity of iron ore mined in 1914 should approximate 41,440,000 long tons" but the returns as known at present by Mr. Burchard show that the actual quantity mined was only 41,439,761 long tons. Mr. Burchard's associates are now inquiring how his optimism happened to lead him to overstate the activity of the iron mines by those 239 tons. The Survey statisticians have not yet figured out the exact percentage of error in Mr. Burchard's figures.

Inspects Texas Work

George Otis Smith, director of the Geological Survey, en route to the Pacific coast, stopped in Harris County, Texas, to inspect the topographical work being done there by the Survey.

RANSOME TO STUDY DEEP WORKINGS AT GOLDFIELD

J. L. Ransome, of the Mineral Resources Division of the Geological Survey, left early in August for a trip to the West. He expects to do general geology work in California, and hopes to visit Goldfield to study the deeper workings in the mines there.

In 1907-08, Mr. Ransome made a detailed report on the Goldfield district. At that time the mining was being done in the volcanic series. Since, the shafts have penetrated into the Cambrian rocks. As a result, the ore bodies have gone through interesting changes. They are now of lower grade, carrying more copper and less gold than was the case in the volcanic overflow.

Owing to the irregularity of the Cambrian strata, they are encountered at various depths of from 1,000 to 1,700 feet.

RAY CONSOLIDATED LABOR TROUBLES ARE SETTLED

In addition to copper derived from concentrating ores at the Ray Consolidated Copper Co., there was a total of 277,851 pounds of copper contained in ores shipped direct to the smelter during the quarter ending June 30. This, combined with the copper contained in concentrates, brings the total gross production for the quarter up to 14,802,231 pounds.

The labor difficulties on the properties were fully and satisfactorily adjusted early in July and from that time forward it is expected that operations will be maintained on a full tonnage basis.

Montana Gold Output Increases

Returns on Montana's metal production for 1914 were completed last month by the Geological Survey. The yield of gold, silver, copper, lead, and zinc was valued at \$47,849,747. This is a decrease of over \$14,000,000 as compared with 1913. This was due principally to the war which, in its early stages, curtailed greatly the production of copper. The gold and zinc production increased decidedly during 1914. There were during 1914, 358 metal mines in Montana, in addition to 147 placer properties, being worked.

PRESIDENT SCHOLZ RECOMMENDS ACTIVE CAMPAIGN FOR NEW MEMBERS

He Points Out That One-Sixtieth of the Nation's Mining Men are Paying for Benefits Which Go to All—Work of American Mining Congress Meets with No Disapproval

There are 90,000 men in the United States directly or indirectly interested in the operation side of mining. The membership list of the American Mining Congress contains a few more than 1,500 names. Probably there are not twenty men in the 90,000 who disapprove of the objects sought by the American Mining Congress. This condition presents certain elements of unfairness which are discussed by Carl Scholz, president of the Congress, as follows:

"Since the foundation of the American Mining Congress its officials have been so busy trying to remove some of the obstacles hindering the progress of the industry that they have not had time to do much missionary work looking to membership. Before the birth of the MINING CONGRESS JOURNAL last January, there was no ready way of reaching the mining public. As a consequence the work of the Congress has not been the subject of extensive publicity. Results show that the work done has been effective. In the future we shall direct more attention toward securing the cooperation of a large number.

"The 1,500 members of the Congress have realized the importance of the work and have made possible the success already achieved.

"It is not fair to the 1,500 that they should bear all the expense of a work which necessarily benefits everyone interested in mining. I am sure that the greater part of the 90,000 will be willing to cooperate when the matter is placed clearly before them.

"With the support of only one-sixtieth of those whose support should have been given, the Mining Congress has been able to accomplish an amount of work of which it is not ashamed. During the past year especially effective strides have been taken, and the outlook for increased accomplishments are splendid.

"The Mining Congress has reached the point at present where its efficiency cannot be increased greatly without additional support. If it were possible to put squarely before each of the 90,000 the objects for which the Mining Congress is striving, I have no doubt that the large majority of them would be more than willing to contribute the small annual fee necessary for associate membership, and many would become active members, thus lending the moral support of

their affiliation with the organization as well as contributing the small financial share which falls to each member.

"There is no need to use illustrations and examples setting forth the remarkable accomplishments made possible by cooperation. All intelligent and observing men realize this fact. It seems that 1,500 is an inconspicuous part of the 90,000 affiliated with the operation of mines in the United States, yet this nucleus, by effective cooperation, soon could draw to itself all others in the industry.

"I am in favor of an active campaign for additional members in order to enlarge the scope of the Mining Congress work. To obtain maximum results from such a campaign it is necessary that each member of the Mining Congress do his share toward calling attention of others to the desirability of joining this movement. Generally, only a suggestion is necessary.

"My experience with mining men convinces me that they are not the kind who accept benefits without bearing their part of the burden. Consequently, the only thing it is necessary to do is to set the objects of the Congress clearly before them.

"In this day of sustained effort in all lines of industry it is difficult oftentimes to bring matters clearly to the attention of the man sought. A considerable percentage of circular letters find their way unopened into the wastebasket. Even personal letters, when dealing with matters of indirect interest, are not digested thoroughly. Too, the busy man often procrastinates. Things he fully intends to do are deferred from day to day. To overcome this we must neglect no form of approach to the mining man who has not affiliated himself with us. There must be the personal appeal. There must be letters. Perhaps there should be printed matter giving facts and figures of the accomplishments of the Mining Congress. All the personal appeals and all the letters must not come from the secretary's office. Members themselves must be active.

"There is going to be a greater call for cooperative effort on the part of mining men during the next year than ever before, if I am not mistaken. The need for this organization will continue to increase year by year. As it becomes more effective the trials and the tribulations of mining will decrease in the same ratio."



SNOW FEATHERS ON TOP OF CAPE MOUNTAIN, CAPE PRINCE OF WALES, ALASKA

This promontory divides the Arctic Ocean from Behring Sea. The snow feathers are formed by fierce wind driving the snow so swiftly that it packs against objects it strikes. The feathers stand against the wind. This photograph was taken near Bartel's and other tin deposits.

FIRST EDITION OF SURVEY'S GUIDE BOOK IS EXHAUSTED

Popularity of New Publication Exceeds Even Most Optimistic Estimates—Second Edition in Press

With the first edition exhausted of the Geological Survey's guide book covering the Northern Pacific route to the Pacific, and a second edition on the press, there is no longer any question as to the popularity of this work. It was a matter of considerable conjecture during the time the volumes were in preparation as to how they would take with the public. To secure distribution for this class of work, that will compare favorably with the publications which are mailed free on request, is difficult.

Much credit is given by Director Smith, of the Survey, to the generous editorial commendation given this guide book for its popularity. The fact that the Survey is publishing a guide book on the Baedeker plan in popular language was widely heralded by the press. The very evident need for just such a publication is proved.

Considerable credit for the large purchases of these guide books is due to the railroads, which have bought liberally for distribution.

LAND CLASSIFICATION BOARD OVERWHELMED WITH WORK

New Homestead Act Results in Greatly Increased Entry of Enlarged Homesteads

The Land Classification Board of the Geological Survey, is being overwhelmed with work as a result of the enlarged homestead act, passed on the final day of the last session of Congress.

This act governs the entry of 320-acre tracts if the lands are nonirrigable. Formerly these lands were applied for by direct letter from the applicant.

The new act changes the procedure so that the farmer who wants a 320-acre tract must file application to entry in the local land office. This gives him a preference right. The matter then is referred to the Geological Survey which determines if the land is nonirrigable. The Land Classification Board accepts or declines applications.

Under the old procedure, applications for this class of land would not average more than 400 per month.

In June, when the effect of the new act became evident, there were 1,320 applications for enlarged homestead. In July this increased to 1,700 and in August the rate of inquiries indicate a still greater increase, according to the incomplete figures available.

Each of these applications involves the solution of a technical question, which cannot be solved quickly.

With its vast store of information, collected through many years, the Survey is able to determine whether the lands on most of these tracts are irrigable or nonirrigable, by their own records. The records of the Reclamation Service and the Agricultural Department also are available to assist in this determination.

In some cases, however, field examinations are necessary before the application can be acted upon formally. Some of the entries depend upon correspondence with the entryman. Before the entry is made, the Survey may cancel its permission if an error is discovered; but sometimes the department makes a mistake in classifying land as nonirrigable which really is irrigable, but no correction can be made after the entry has been made.

At the end of July, 238,000,000 acres had been designated for entry.

"PERHAPS THE GREATEST ADVANTAGES OBTAINED FROM A CONVENTION OF MEN IN THE SAME INDUSTRY ARE THE INFORMAL CONFERENCES THAT TAKE PLACE BETWEEN INDIVIDUALS."

MINING TO HAVE IMPORTANT PLACE AT PAN AMERICAN SCIENTIFIC CONFERENCE

American Mining Congress to Cooperate Actively at Gathering of Scientific Men from Twenty-one Republics—Hennan Jennings Heads Section—Smith and Manning Direct Sub-Sections

In accordance with the resolutions of the first Pan American Scientific Congress, held in Santiago, Chile, December 25, 1908, to January 5, 1909, a Second Pan American Scientific Congress will meet in Washington next December under the auspices of the Government of the United States. The Congress will open on Monday, December 27, 1915, and adjourn on Saturday, January 8, 1916.

Mining is to have one of the important places on the program. Representative mining men from the twenty-one American republics will be in attendance. Important steps affecting the mining industry throughout the hemisphere will be taken. The conference is expected to attract an especially large delegation of American mining men to Washington. The American Mining Congress expects to cooperate actively to help make the conference a success.

The executive committee of the congress is as follows: William Phillips, A.B., Third Assistant Secretary of State, chairman, ex-officio; James Brown Scott, J.U.D., Secretary Carnegie Endowment for International Peace, vice-chairman; William H. Welch, M.D., LL.D., President, National Academy of Sciences, honorary vice-chairman; John Barrett, LL.D., Director General, Pan-American Union; W. H. Bixby, Brigadier General, U. S. A., retired; Philander P. Claxton, LL.D., Commissioner of Education; William C. Gorgas, M.D., Sc.D., Surgeon General, U. S. A.; William H. Holmes, B.S., Head Curator, Smithsonian Institution; Hennen Jennings, C.E., former president, London Institution Mining and Metallurgy; George M. Rommel, B.S., chief, Animal Husbandry Division, Bureau of Animal Industry, Department of Agriculture; L. S. Rowe, Ph.D., President, American Academy of Political and Social Science; Robert S. Woodward, Ph.D., president, Carnegie Institution of Washington.

The organization officers are John Barrett, LL.D., secretary-general, and Glen Levin Swiggett, Ph.D., assistant secretary-general.

START OF MOVEMENT

The Pan American Scientific Congress had its origin in the scientific congresses that had been held by the Republics of Latin America prior to the congress in Santiago, and was established with the generous conviction that the United States should share in their undertaking. This conviction was splendidly shown

in the unsolicited and voluntary action of the first congress in the selection of Washington as the place of meeting of the second congress, the main purpose of which will be to increase the exchange of knowledge and bring about a better understanding of the ways in which the several republics can work to the advancement of science, the increase of culture, and the promotion of trade, commerce and mutual helpfulness. In view of the fact that this second congress is to be held under the auspices of the Government of the United States, it is earnestly hoped that our foremost scientists, learned societies and educational institutions will cooperate in every way possible in order to insure the success of the congress.

The program of the congress is divided into nine main sections as follows:

1. Anthrology, Mr. William H. Holmes.
2. Astronomy, Meteorology, and Seismology, Mr. Robert S. Woodward.
3. Conservation of Natural Resources, Agriculture, Irrigation and Forestry, Mr. George M. Rommel.
4. Education, Mr. P. P. Claxton.
5. Engineering, General W. H. Bixby.
6. International Law, Public Law, and Jurisprudence, Mr. James Brown Scott.
7. Mining and Metallurgy, Economic Geology, and Applied Chemistry, Mr. Hennen Jennings.
8. Public Health and Medical Science, Gen. Wm. C. Gorgas.
9. Transportation, Commerce, Finance, and Taxation, Mr. L. S. Rowe.

Each section is divided into sub-sections. There are forty-five of the latter in all, each with a special committee and program. The deliberations of the congress will be based, in consequence, according to the subject-matter to be discussed in the various sub-sections. In addition to the general sessions of the congress, there will be joint sessions between the different sections and sub-sections. Several of the leading national association of the United States, concerned with the investigation of subjects of pertinent interest to some of the sections of the congress, have received and accepted invitations from the executive committee of the second Pan-American Scientific Congress to meet in Washington at the same time and hold one or more joint sessions with a section or sub-section of corresponding interest.

The following persons will be members of the congress: The official delegates of the countries represented; the representatives of the universities, institutes, societies and scientific bodies of the countries represented; such persons in the countries participating in the congress as may be invited by the executive committee, with the approval of the countries represented; all writers of papers.

All members of the congress shall be entitled to attend its sessions, to take part in the debates and to receive a copy of such publications as the executive committee may issue. There will be no membership fee of any character.

The interest throughout Latin America for the congress is steadily growing. The executive committee is assured that all of these countries appreciate deeply the active preparations now being made in Washington for a successful meeting, and will avail themselves generously of this great opportunity for Pan-American solidarity of action in intellectual interests. Each of the participating Latin-American countries, eighteen in number, has been invited to appoint a committee to co-operate with the executive committee of the congress and make such arrangements as will insure the most generous participation of each country in the congress through the attendance of delegates and representation on the program. A feature of particular importance and appealing interest to the Latin-American countries is that of the special Pan-American topics which will be discussed at the time of the congress in a series of conferences. The various sections of the congress, and in some cases the different sub-sections, have designated certain topics to be discussed in this manner. Each country has been invited to select its most eminent writers to prepare papers on these topics, one person for each topic.

Section 7 comprises the following subjects: Mining and Metallurgy, Economic Geology, and Applied Chemistry. It will consider especially the mineral resources of the several republics, the methods by which these resources can be developed and used, and the manifold applications of chemistry in the production and utilization of materials of benefit to man.

The chairman of this section is Mr. Hennen Jennings, a former president of the London Institute of Mining and Metallurgy and member of the Institute of Civil Engineers (London), the American Institute of Mining Engineers, the South African Association of Engineers, and other national and international societies of scientific and mining interests. Mr. S. Sanford, mining engineer and editor, the United States Bureau of Mines, Washington, D. C., is the secretary of this section.

The following persons compose the committees of the four sub-sections in section 7:

1. Mining.

Van H. Manning, Director of the U. S. Bureau of Mines, Washington, D. C., chairman.

J. F. Callbreath, Secretary of the American Mining Congress, Washington, D. C.

Dr. C. H. Lindley, lawyer, authority on mining law, San Francisco, Cal.

E. W. Parker, Statistician, Wilkes-Barre, Pennsylvania.

H. C. Perkins, mining engineer, Washington, D. C.

G. S. Rice, Chief Mining Engineer of the U. S. Bureau of Mines, Pittsburgh, Pa.

W. L. Saunders, engineer, President of the American Institute of Mining Engineers, New York, N. Y.

B. B. Thayer, Past President of the American Institute of Mining Engineers, New York, N. Y.

2. Metallurgy.

W. R. Ingalls, President of the Mining and Metallurgical Society of America, and Editor of the Engineering and Mining Journal, New York, N. Y., chairman.

Dr. F. G. Cottrell, Chief Chemist of the U. S. Bureau of Mines, San Francisco, Cal.

Dr. R. H. Richards, Professor Emeritus of Mining Engineering and Metallurgy, Massachusetts Institute of Technology, Boston, Mass., former president of the American Institute of Mining Engineers.

Bradley Stoughton, metallurgical engineer, Secretary of the American Institute of Mining Engineers, New York, N. Y.

Dr. L. D. Ricketts, mining and metallurgical engineer, New York, N. Y.

Karl Eilers, metallurgical engineer, New York, N. Y.

W. R. Walker, metallurgist, New York, N. Y.

Dr. G. H. Clevenger, Professor of Metallurgy, Stanford University, Cal.

3. Economic Geology.

Dr. George Otis Smith, Director of the U. S. Geological Survey, Washington, D. C., chairman.

Dr. J. C. Branner, President of Stanford University, Stanford University, Cal., former President of the Geological Society of America.

Dr. J. F. Kemp, Professor of Geology, Columbia University, New York, N. Y., former President of the American Institute of Mining Engineers.

Waldemar Lindgren, Professor of Economic Geology, Massachusetts Institute of Technology, Boston, Mass.

Dr. C. R. Van Hise, President of the University of Wisconsin, Madison, Wis., former President of the Geological Society of America.

David White, Chief Geologist of the U. S. Geological Survey, Washington, D. C.

Dr. I. C. White, State Geologist of West Virginia, Morgantown, W. Va., formerly chief of the Brazilian Coal Commission.

Dr. Bailey Willis, consulting geologist to Argentine Government, Professor of Geology, Leland Stanford University.

4. *Applied Chemistry.*

Dr. Charles E. Munroe, authority on explosives; dean of graduate studies, George Washington University, Washington, D. C.; former president of the American Chemical Society, Chairman.

Dr. Carl L. Alsberg, Chief of the Bureau of Chemistry, Department of Agriculture, Washington, D. C.

Dr. C. H. Herty, President of the American Chemical Society, Chapel Hill, N. C.

Dr. B. C. Hesse, chemist, New York, N. Y.

Dr. W. F. Hillebrand, Chief Chemist of the U. S. Bureau of Standards, Washington, D. C.; former president of the American Chemical Society.

Laurence Addicks, electrochemist; President of the American Electrochemical Society, Douglas, Ariz.

Dr. P. C. McIlhiney, chemist; Chairman of the New York Section, Society of Chemical Industry, New York, N. Y.

Dr. Harvey W. Wiley, chemist; former president of the American Chemical Society, Washington, D. C.

For this section some of the most distinguished scientists in Pan-America have been invited to prepare papers on the different subjects described in the preliminary program, edition of April 15, a copy of which may be obtained on request to the Secretary General of the Congress.

Mr. Jennings has proposed for the series of special Pan-American conferences to be discussed by all of the participating countries the following topics:

(A) *Mining.*

The mining laws of each country and the changes that may be made to aid the development of mineral resources. History of the mining industry in each country, with special reference to the beginnings of that industry.

(B) *Metallurgy.*

Development of the patio process. Present methods of concentrating ores and the development of concentration methods.

(C) *Mining and Metallurgy.*

Development of hydroelectric power for mining and metallurgy, the amount probably available, and specific benefits from its utilization.

(D) *Mining, Metallurgy and Economic Geology.*

A bibliography on economic geology, mining and metallurgy, each country to cooperate by assembling references to its own mineral resources and their development.

Attack Colorado Rates

Complaint has been entered by the Oakdale Coal Co. against the Denver & Rio Grande, attacking charges on coal removed from the company's mine at Tropic in the La Veta District of Colorado, to various interstate destinations. Reparation is asked.

BUREAU OF MINES ISSUING THREE IMPORTANT PAPERS

Three technical papers of unusual importance are to be issued soon by the Bureau of Mines. A bibliography of the Chemistry of Gas Manufacture by W. F. Rittman and M. C. Whitaker is of special interest in view of the fact that much attention is certain to be given any report made by Mr. Rittman, whose recent discoveries promise to revolutionize the method of refining gasoline, benzol and toluol.

Technical paper number 97 has to do with saving fuel in heating a house. The authors are L. P. Breckenridge and S. B. Flagg.

The composition of natural gas in twenty-five cities is the subject of another paper by G. A. Burrell and G. G. Oberfell.

SOLDIERS IN TRENCHES ASK FOR WORK ON GEOCHEMISTRY

An idea of the type of men serving in the ranks in Europe may be judged from a letter received recently by Director Smith of the Geological Survey. It was from a Montreal professor who is serving as a lieutenant in the French army. During the long waits behind the guns he is discussing with fellow soldiers matters of geology and related sciences. One of the subjects of their conversations is geochemistry. The object of the letter was to secure the Survey's publication on this subject. A later communication acknowledges the receipt of the book in the trenches.

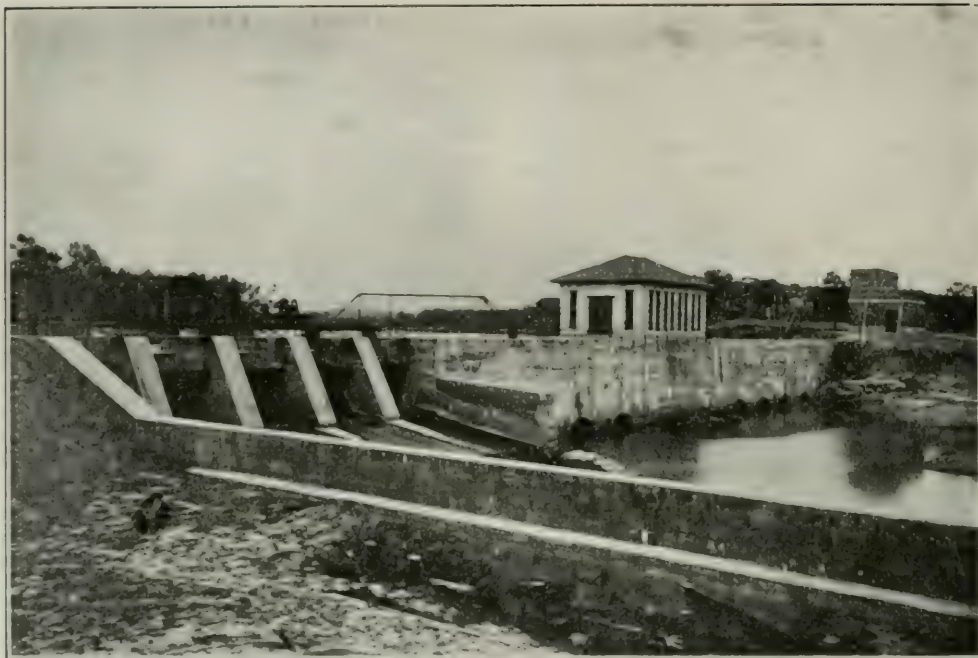
Colorado Altitudes Established

The altitudes of high peaks in Colorado have been ascertained accurately by the Geological Survey. Pike's Peak is 14,110 feet above the level of the sea. Massive Mountain is higher by nearly 400 feet; Elbert Mountain is the same height to the foot, that is, 14,402 feet. Blanca Peak is 14,390 feet high; Carlisle Peak, 14,259 feet; Evans Mountain, 14,260 feet, and La Plata Peak, 14,332 feet. In addition, a number of other mountains were found to be higher than Pike's Peak.

NEW DATA ON CALIFORNIA COPPER REGION BEING SECURED

A review of previous field work, having a bearing on the copper deposits of Shasta County, Cal., is being conducted by B. S. Butler, in charge of copper at the Geological Survey, and Prof. L. C. Graton, who is a professor of Economic Geology at Harvard University.

The result of this revision is to be incorporated into a detailed report of Shasta County, which was done by Professor Graton while connected with the Geological Survey. This report, which is quite voluminous, is nearing completion.



Sieberthol Photo

HYDROELECTRIC INSTALLATION OF EMPIRE DISTRICT ELECTRIC CO.,
at Lowell, Kans., supplying power to lead and zinc mills and mines of Joplin district.

AMERICA NOT EXPECTED TO LOSE ITS ATTRACTIONS TO LABORERS

The revolutionary effect of the war upon trade is surpassed by the effect upon immigration. The excess of arrivals over departures for the year ended June 30, 1915, was only 50,070. Since 1910 the range has been between 400,000 and 800,000. Naturally there is a decrease in the arrivals from all nations, the greatest decrease being in Italians, 227,882. Italians also lead in departures for home, 124,246, but the greatest decrease in departures, singularly enough, is in English men and women. Last year 120,842 English went home, and this year of war only 76,868, says the *New York Times*.

Each year since 1910, except only 1915, arrivals have exceeded a million; now they have fallen to 434,244. These figures have an important bearing upon the labor market, and it would be interesting to know whether the return flow will reach old dimensions when the war is over. The exodus from the United States just now is only partly for patriotism. War prices are paid for labor, sufficient even to tempt some Americans to go over. But after the war it may be supposed that the American bid for labor will again be the world's highest, while the war wages no longer will be paid abroad. Labor like gold goes where the bid is best, and there is no reason to suppose that after the war this country will lose its attraction.

HIGH PRICE OF ZINC CAUSES MANY IDLE SMELTERS TO BLOW IN

Due to the demand for zinc, practically every zinc smelter in the country is in operation. Even the old long-idle coal-fired zinc smelters are being used. Work is being rushed on the new smelter being built by the United States Steel Corporation at Pittsburgh. A large acid plant will be operated in connection with this smelter. Other zinc smelters are reported to be under construction in Indiana and Oklahoma.

It is feared by some that the building of large zinc smelters in the East will tend to lower the price of zinc. The big steel companies are the largest domestic consumers of spelter. It is believed that ultimately these smelters will be supplied from ores from mines owned by the company which would eliminate these big consumers from the normal market.

SEARCH FOR DREDGING GROUND CLAIMING ATTENTION IN OREGON

Reports of the Geological Survey from Oregon indicate a considerable activity in the search for dredging ground. This is in contrast to the lode mining which, generally speaking, is dull. The interest in placer mining is due largely to the success of the dredge in the Powder River near Sumpter, Ore.

MINING CONGRESS COMMITTEE LAYS FOUNDATION FOR UNIFORM STATE LAWS

Working with Bureau of Mines "Rules and Regulations for Metal Mines" are Formulated—Expected to Form Basis of Private Systems of Inspection Looking to Greater Safety

A publication of considerable interest to the metal mining districts of the United States has just been issued by the Bureau of Mines under the title, "Rules and Regulations for Metal Mines." It is to be known as Bulletin 75 and the authors are W. R. Ingalls, J. Parke Channing, James Douglas, James R. Finlay, and John Hays Hammond. The committee was originally appointed at a meeting of the American Mining Congress at Denver, Colo., in November, 1906, and its object was the drafting of a modern law governing quarrying and metalliferous mining which could be recommended to the several States for adoption, in the hope that the passage of such a uniform law by the mining States would tend to lower the number of fatal and serious accidents.

When the committee took up its work it found that Colorado, Missouri, Montana and New York were the only States that had enacted mining laws of broad scope applicable to other than coal mines. California, Arizona, Idaho, Kansas, Michigan, Minnesota, Nevada, New Mexico, North Carolina, Oregon, South Dakota, Tennessee, Utah, Washington, and Wyoming were found to have statutes pertaining to metalliferous mining, but with few and incomplete safety provisions.

This committee of the American Mining Congress did considerable work along this line and made a number of reports. In April, 1911, Dr. Joseph A. Holmes, director of the Bureau of Mines, invited the committee to serve as a committee of that bureau with the idea of preparing a final draft of a law, and this was accepted.

Starting with a composite of existing laws, the committee by successive stages endeavored to work out a general law that would embody the best mining thought of the day, be in accord with approved modern mining practices, and yet at the same time be effective and practice in operation, and not merely a collection of rules and regulations to be disregarded or enforced at will.

The committee in discussing its report says: "We have found that a great deal of interest and attention among mine operators has been awakened by our advocacy of improved means for promoting safety in mining. However, we are under no illusions that our recommendations will be immediately and generally adopted. We consider our work

to be especially of educational character rather than anything else. It will be useful in three main ways, we think, as follows:

"1. As a basis for State legislation.

"2. As a basis for private systems of inspection.

"3. As a collection of simple rules for the guidance of everybody engaged in mining.

"Since the publication of our first report, several States have adopted new mining laws and amended their old ones. In this connection our code has served some purpose; for example, in the drafting of the laws that now stand on the books of the States of Nevada and Arizona. We do not expect that any State will at once adopt all of our recommendations, especially those that are essentially of legal character. We offer them as what we think ought to be and hope some day will be.

"Since our first publication, furthermore, most of the mining companies of consequence have adopted inspection systems or have at least framed codes of safety rules, which have been based to a large extent on our code, notably so in the case of the Cleveland-Cliffs Iron Co. This tendency, in fact, has become one of the most important phases in the national movement for 'safety first.' This is the gratifying consummation that we had in mind. Unquestionably, also, the widespread adoption of State laws providing compensation for injured workmen has helped the safety movement by making accident prevention worth while.

"We consider, however, that the chief usefulness of the code of rules that we have formulated will be to small operators, who frequently engage in unsafe practices without knowing that they are unsafe or without thinking about the matter at all. There is a reasonable hope that our report will be of educational value to all mining operators.

"The act that we have drafted may be regarded from two angles—from the legal and from the technical. With respect to the latter we have had in mind the conditions and practice of mining existing and prevailing in the several parts of the United States. In our treatment of the matter from the legal standpoint, in which we have had the advice of good lawyers, we have refused to clothe the inspector of mines with the optional powers that are given to him under the laws of many of the British colonies, and, also, we

have refused to convey to him the sweeping power that is given to health inspectors in some of our own States.

"The code of mining rules that has been finally drafted by the committee is the co-ordination of the experiences, opinions, and suggestions of a great many men who have assisted the committee in an advisory capacity and as directly employed aids. The former have included many engineers actively engaged in practice, members of professional societies, and members of the bar; the latter have included members of the regular staff of the Bureau of Mines and of the personal staffs of members of the committee. The committee has sought to obtain many points of view and to summarize many experiences. The draft that has been prepared is not offered as the last word upon this subject. There are many phases of this subject with which the committee has been unable to deal thoroughly. Thus the committee confesses its inability to formulate at the present time adequate rules covering the important subject of ventilation of mines. Similarly there are many practices in open-cut mining, by steam shovels, etc., regarding which the committee has felt unable to formulate rules. We feel, however, that the rules so far as prescribed may advantageously be applied to open mining whether it be simple quarrying or the extraction of metalliferous mineral, as well as to underground mining."

COAL MINES IN LEAVENWORTH DISTRICT SUBJECT OF REPORT

A report on the Leavenworth and Smithville coal fields of Kansas and Missouri will be published by the Geological Survey within the next three months.

The report is the work of Henry Hinds and F. C. Green. It will show the structure of rocks in that region, indicating the most favorable places to prospect for oil and gas.

This coal mining region is noted as having the deepest mines in the Middle West. Shafts have been sunk to a depth of 720 feet to coal veins twenty-two inches thick. The coal is mostly low grade. Still the mining is done at a profit. This is made possible by the fact that this is the only coal mined in important counties in this section of the country. It enjoys a splendid market at Leavenworth, where State and Federal institutions and manufacturing plants are heavy purchasers. One of these mines just has been worked out after 40 years of producing.

IRON ORE PRODUCTION FALLS OFF 32 PER CENT IN 1914

There was a decrease of 32 per cent in the amount of iron ore mined in the United States during 1914. The total production of American mines was 41,500,000 tons.

Minnesota led all other States as an iron producer, with Michigan, Alabama, Wisconsin, and New York in second, third, fourth, and fifth places, respectively.

GEOLOGICAL SURVEY POINTS

WAY TO NEW OIL FIELD

An example of the practical value of geological investigations of oil fields is shown in the Colmar district of Illinois.

Henry Hinds, of the Geological Survey, indicated the possibility of the occurrence of oil in this district, when it was not known that oil existed in that part of the State.

Drilling developed presence of oil in quantities. One hundred and eighty wells have been drilled in the last year of which 130 were productive.

PLATINUM PRODUCTION IN U. S. REACHING IMPORTANT FIGURE

Platinum production in California and Oregon is beginning to reach an important figure. Five hundred and seventy ounces of crude platinum were recorded in 1914, an increase of nearly 100 ounces over the production of 1913.

The platinum extracted from this yield was valued at \$23,625. The market price of platinum is \$45 an ounce.

In addition to the platinum recovered from placer mines, 2,900 ounces were recovered at smelters and refineries.

Not all of this latter yield, however, came from domestic ore.

BUREAU OF MINES' REPORTS BEING USED AS TEXTBOOKS

Bulletins of the Bureau of Mines are being used as textbooks in the instruction department of the Copper Queen Consolidated Mining Co. An extract from a recent letter from this company to the Bureau of Mines is as follows:

"We are using your bulletins in the form of textbooks for our mining men in our instruction department, and I believe in the near future they will be used by many of the larger companies for the same purpose."

Canadian Annual Report Out

The annual report of the Canadian Geological Survey for 1914 has been issued. It contains a large amount of very valuable data on the geology of the Dominion.

AMERICA'S MOST REPRESENTATIVE MINE OPERATORS WILL ASSEMBLE AT SAN FRANCISCO SEPTEMBER 20-22.

AMERICAN MINING CONGRESS COMMITTEE TO CONSIDER HOLMES MEMORIAL

Body of Twenty-one Will Meet at San Francisco to Discuss Plans—Will Cooperate with Other Committees—Statue, Scholarship and Award Among Suggestions Submitted—Engineers Name Committee

In order to make certain the selection of a suitable memorial for the late Dr. Joseph A. Holmes, the American Mining Congress has selected a committee of twenty-one from its membership to consider this important matter. This committee is instructed to cooperate with committees that may be appointed by other organizations.

The committee is composed of the following: Samuel A. Taylor, Second National Bank Bldg., Pittsburgh, Pa.; George H. Cushing, 1112 Manhattan Bldg., Chicago, Ill.; J. H. Richards, Boise, Idaho; C. W. Goodale, Butte, Mont.; H. N. Lawrie, Yeon Bldg., Portland, Ore.; B. F. Millard, Valdez, Alaska; Dr. David T. Day, Washington, D. C.; J. C. Kolsem, Terre Haute, Ind.; W. R. Woodford, Rockefeller Bldg., Cleveland, Ohio; T. H. O'Brien, Dawson, N. Mex.; Will L. Clark, Jerome, Ariz.; John Hays Hammond, 71 Broadway, New York City; Charles S. Keith, Keith & Perry Bldg., Kansas City, Mo.; Thomas B. Stearns, Denver, Colo.; Jesse Knight, Provo, Utah; M. D. Leehey, Alaska Bldg., Seattle, Wash.; Dr. I. C. White, Morgantown, W. Va.; P. J. Quealy, Kemmerer, Wyo.; Dr. Joseph Hyde Pratt, Chapel Hill, N. C.; Dr. E. W. Parker, Miners' Bank Bldg., Wilkes-Barre, Pa., and William Griffith, Coal Exchange, Scranton, Pa.

This committee will meet at San Francisco during the Mining Congress convention to decide upon a memorial plan.

ENGINEERS' COMMITTEE NAMED

D. W. Brunton, of Denver, formerly president of the American Mining Congress; Hennan Jennings, Washington, D. C., formerly vice-president of the American Mining Congress, and Van H. Manning, director of the Bureau of Mines, have been selected by the American Institute of Mining Engineers as a committee to make arrangements for this memorial. As the members of the committee will be in San Francisco to attend the annual meeting of the Mining Congress it has been decided to take up this matter at that time.

Mr. Manning is in receipt of the following memorandum dealing with the form that the memorial should take:

1. A monument to be erected over Dr. Holmes's grave in Rock Creek Cemetery:

(a) Few people would ever see this monument.

(b) Dr. Holmes's family is able, and has undoubtedly already taken steps to provide such a monument.

(c) This method would not keep alive the memory of Dr. Holmes.

2. A memorial volume.

(a) The book would be placed on the shelf and forgotten after a time.

(b) Dr. Holmes's writings were not voluminous and such a volume would have to be made up largely of contributions from friends and associates.

(c) There would be the usual delays incident to the publication of such a volume.

DR. DOUGLAS'S SUGGESTIONS

3. A scholarship (suggested by Dr. Douglas); a fellowship; or a professorship.

(a) A practical difficulty would be the selection of the institution to control such a scholarship, fellowship, or professorship. Neither Cornell University nor the University of North Carolina has a high-ranking Department of Mines.

(b) Dr. Holmes did not have preeminent rank as a geologist, mining engineer, or in any of the lines relating to mining engineering which form departments in colleges or universities.

(c) The matter already has been taken care of by Dr. Phillips in the establishment at the Colorado School of Mines of the Joseph A. Holmes Professorship of Safety Engineering.

4. It would be an easy matter to raise a fund of two or three hundred thousand dollars by going to the miners of the country and asking for small contributions, but such a large fund, collected from all classes of men engaged in the mining industry, should have a larger object than providing the monument or the memorial volume, or the scholarship in a college or university, referred to above. Such a fund, called the Joseph A. Holmes Foundation, or Fund, might properly be devoted to the relief of widows and children of miners killed in mine accidents: But

(a) Two hundred thousand dollars at 4 per cent. would be only \$8,000 a year, which would be entirely insufficient for this purpose.

(c) The matter is being pretty well taken care of by the Workmen's Compensation acts of the different states.

(c) The cost of administering such a fund would eat up a considerable part of the annual income.

The following method of perpetuating Dr. Holmes's memory is suggested as a substitute:

THE HOLMES AWARD

An annual award to the person contributing most during each year to the increase of safety in the mineral industries of the United States.

(a) This method has the advantage of elasticity. If the funds collected for this purpose amount to, say, only a couple of thousand dollars, the income would be eighty or a hundred dollars a year, which would provide for a suitable gold medal to be presented each year to the person contributing most to increased safety in the mineral industries. If the fund should amount to, say, \$25,000, the income from this fund at 4 per cent. would be \$1,000 a year, which award would frequently go to some research worker to be used in the furtherance of research work looking to the promotion of safety in the mining industries.

(b) While the American Society of Mechanical Engineers has its Fritz medal, a Holmes medal awarded each year by a committee of the American Institute of Mining Engineers would be an appropriate way of handling the matter, nevertheless, we think that "The Holmes Award" should be under the control of the American Academy of Sciences. Dr. Holmes was probably more intimately connected with this scientific body than with any other of the numerous organizations of which he was a member. Also the American Academy of Sciences has a quasi-governmental status, being under the law a body advisory to the Federal Government.

MEDAL PLAN OUTLINED

If the money collected amounts to no more than \$2,000 or \$2,500, the memorial to Dr. Holmes might well take the form of a medal to be awarded annually, and the fund itself, and the award of this medal, might properly be under the control of the American Institute of Mining Engineers. But if the fund collected should amount to as much as \$25,000, we think that such a fund should be controlled by the American Academy of Sciences, and the income from the fund awarded by a committee of that body, which committee should of course include in its membership a representative or representatives of the American Institute of Mining Engineers.

(c) This method would keep alive Dr. Holmes's memory, because each year the committee would meet to make the award; a dinner would doubtless be given in honor of the person receiving the award; and there would be wide mention of the award in the technical press and in the newspapers of the country.

(d) If the fund raised should be large enough to permit of a money award each year, this would mean that the income of the fund would in all probability be a continuing amount devoted each year to research work along the lines of Dr. Holmes's life work, *i. e.*, making safer the work of the men who go down into the mines.

A memorial tablet should be placed in the main entrance hall of the new Pittsburgh building of the Bureau of Mines. Mr. Rice suggests a bronze bust, but, aside from the difficulty of obtaining an accurate likeness, the tablet, with appropriate inscription, would be a better idea; the employees of the Bureau of Mines to provide this tablet.

George S. Rice, Chief Mining engineer of the Bureau of Mines, in charge of the station at Pittsburgh, suggests the erection of a monument at the grave along the lines of St. Gaudens' famous "Grief" in Rock Creek Cemetery, which has attracted much attention in the United States and abroad.

Mr. Rice also suggests, in case the other project is not found feasible, to compile a volume containing a sketch of Dr. Holmes' life; views of his work by a select number; resolutions by technical societies and selections from his writings.

COLORADO SCHOOL OF MINES

CREATES HOLMES MEMORIAL

Professorship of Safety and Efficiency Engineering to Stand as Monument to Late Scientist

The Colorado School of Mines trustees recently created the Joseph A. Holmes professorship of safety and efficiency engineering in honor of the late Government official. The action was taken by the following resolution:

"Whereas, The late Joseph A. Holmes, director of the United States Bureau of Mines from the date of its creation, May 16, 1910, until his death in Denver, July 13, 1915, devoted his life to the advancement of safety and efficiency in the mining and metallurgical industries of the entire country; and

"Whereas, It is meet and proper that a lasting memorial to him should be established and maintained; therefore be it

"Resolved, By the board of trustees of the Colorado State School of Mines, that there be and hereby is created a full chair in this institution to be known as the Joseph A. Holmes professorship of safety and efficiency engineering; be it further

"Resolved, That all subjects essentially comprised under the term of 'safety and efficiency engineering' now taught at this institution be transferred to this new professorship; be it further

"Resolved, That the president of the school be authorized to recommend to this board, at some future meeting, names to be considered with this professorship as suitable candidates."

BUREAU OF MINES ADDS 338

MILLIGRAMS TO RADIUM STOCK

During July 338 milligrams of radium metal were produced by the Bureau of Mines. The value of this radium is \$40,560. The Bureau of Mines has recovered all together 1,646 milligrams of radium metal.

Dr. Charles L. Parsons, in charge of the Division of Mineral Technology at the Bureau of Mines, is now in the West. He will visit the radium mines in Paradox Valley and will inspect the Denver laboratory. Dr. Parsons will return to Washington October 10.

MINE OWNERS IN PENNSYLVANIA VICTIMS OF ANTIQUATED TAXATION LAWS

Valuation Is Based on Laws Sixty-five Years Old—Value of Property Must Be Judged by Assessor—Advice from Technical Men Frowned upon by the Courts—Public Just Awakening

BY WILLIAM GRIFFITH¹

The mine "taxation system" in the State of Pennsylvania reminds me of the farmer, who after intently contemplating the giraffe at the "Zoo" turned to his friend and said, "Well, by gum, there ain't no such animal," because, although we tax coal in some counties in Pennsylvania, there is no general system of *mineral* valuation and taxation for the State. The valuation and taxation of real estate in Pennsylvania are based on some ancient laws. The act of 1841 provides:

"And from and after the passage of this act, it shall be the duty of the several assessors and assistant assessors, to assess, rate and value all objects of taxation, whether for State, county, city, district, ward, township or borough purposes, according to the actual value thereof and at such rates and prices for which the same would separately *bona fide* sell."

The act of 1842 prescribes the form of oath to be taken by assessors, which requires that

"Assessors shall justly and honestly, and to the best of their judgment, assess and value every separate lot, piece or tract of land with improvements thereon, and all personal property made taxable by the laws of this commonwealth, within their respective districts, at a rate or price, which they, the assessors, shall after due examination and consideration, *believe* the same would sell for, if sold singly and separately at a *bona fide* sale after full public notice."

Another section of the same act provides, that the county commissioners may sit as a Board of Revision and inquire whether "all property to be valued for taxation for State and county purposes has been valued at a sum or price not less than the same would bring after full public notice at public sale, supposing each separate lot, or piece or tract of land with all improvements, or the personal property of each individual, company or corporation only were to be sold."

It will be noted that the above antiquated laws were enacted for the sole purpose of valuing surface lands for taxation purposes and were not intended to cover the subject of valuation of mineral lands, but in the absence of any other law, the counties of this State are now forced for purposes of mineral taxation to adapt these old laws to purposes for which

they were never intended and are in no wise fitted, and which actually work injustice wherever they are applied—thus resulting in an endless succession of tax appeals and hearings and rehearings, etc. Very discouraging and costly for both land owners and county authorities, for both insist in employing lawyers to do the appealing, and engineers to do the valuing, and if the reports of the latter contain any hint or disclosure of system, or plan, good judgment, or intelligence in *method*, of arriving at values, the chances are that the courts will declare such valuation illegal or void, because not in accord with the above laws, which plainly provide that the assessor, "who may be the ice man or plumber," shall value the lands at a price, which after due examination *he believes* the same would *publicly sell for after full public notice*. Expert knowledge of mineral values, present-worth royalties, quantities and qualities, etc., etc., and *methods of deducing taxable values* therefrom not being contemplated by the above law and, therefore, illegal in Pennsylvania. Although Pennsylvania is one of the first mining States in the Union, the citizens are but just awakening to the evident injustice imposed upon them through the lack of system in the taxation of mineral lands.

UTAH COPPER CO.

MAKES NEW HIGH RECORD

During the quarter ending June 30 there was treated at both plants of the Utah Copper Co. a total of 2,215,159 tons of ore, as compared with 1,396,341 tons for the previous quarter. The tonnage handled during the quarter was the largest ever treated during any one quarter in the history of the property, the previous high record having been for the fourth quarter of the year 1913, when a total of 2,113,080 tons was milled. The average grade of the ore milled was 1.42 per cent. copper, as compared with 1.44 per cent. copper for the first quarter of the year, and the average extraction was 64.85 per cent. The extraction was low partly because the ore, at times, contained considerable copper in the form of carbonates, but principally on account of the very large tonnage of ore treated.

¹Mining Engineer and Geologist, Coal Exchange Building, Scranton, Pa.



Radiograph Made by Specimen of Pitch Blende
from the Wood Mines, Gilpin County, Colo.
Twenty-four Hours Exposure, Rough Surface.

BLACK DIAMOND FAVORED MANNING FOR DIRECTOR

In the issue of *Black Diamond* of August 7 the following editorial appears:

"When William Jennings Bryan went off on a peace debauch and resigned from President Wilson's cabinet, the newspapers and everybody began to speculate on who would be his successor. They expected President Wilson to do the customary thing and hence to search for some conspicuous figurehead who could fill the position and reap the honors while some efficient somebody else did the practical work.

"That was not President Wilson's idea, however. Instead, he promoted the next in line. He got, for once, a Secretary of State who really can do the work of the Department of State. Secretary Lansing is living up to the nation's expectations in every particular.

"On a smaller scale, a similar problem is presenting itself at Washington. Dr. Holmes, the director of the Bureau of Mines, died recently. A new man must be selected to fill his place. Most commentators have been looking around to find a conspicuous man to adorn the title—or—while some one else does the work, be adorned by it.

"In the meantime, there is in the bureau now a very efficient person by the name of Van H. Manning. He has been the assistant of Dr. Holmes. For the last year he has been acting director of the Bureau of Mines. Many of the things which Dr. Holmes could not find time to do, Mr. Manning has done. Many of the papers and reports which Dr. Holmes did not have time to write or edit, Mr. Manning has 'whipped into shape.' He knows the work of the bureau because he has been in it for a long time.

"As assistant director, he is in line for promotion. So far as we can see now, there is no good or sufficient reason why President

Wilson should not follow his own precedent and promote Mr. Manning to the head of the bureau.

"If promoting the next man in line to the bigger position, because he showed a particular fitness for the work, were adopted in the Government bureaus, it would be a first-rate thing for the public work in general. It would teach employes of various bureaus and departments that they were not merely under Civil Service, but that they might come to occupy conspicuous positions if they learned their jobs.

"This is what Mr. Manning has done, so we are informed, and it would be a mighty good thing to recognize that fact by his promotion."

MOLYBDENITE TREATED BY ONLY ONE AMERICAN FIRM

Molybdenite is treated by only one firm in the United States, so far as is known to the Geological Survey. Henry E. Wood & Co., of 1734 Arapahoe, Denver, Colo., is handling custom molybdenite ores.

In response to numerous inquiries which have been reaching the American Mining Congress as to buyers of antimony and molybdenite, the following list of companies, understood to be in the market for these minerals, is given:

Purchasers of molybdenite are: Baker-Adamson Chemical Co., Easton, Pa.; J. T. Baker Chemical Co., Phillipsburg, N. J.; Goldschmidt Thermit Co., 90 West Street, New York, and the York Metal & Alloys Co., York, Pa.

Buyers of antimony are as follows: Magnolia Metal Co., 113-15 Bank Street, New York City; M. Elsasser, 625 Security Building, Los Angeles, Cal.; C. Solomon, Jr. (Chapman Smelting Co.), 509 Battery Street, San Francisco, Cal.; Wm. Wraith, manager, International Smelting Co., Salt Lake City, Utah; Edw. Hill's Son & Co., Inc., 65 Wall Street, New York City; Pennsylvania Smelting Co., Pittsburgh, Pa.; Hoyt Metal Co., St. Louis, Mo.; A. D. Mackay, 130 Pearl Street, New York City; Atkins, Kroll & Co., San Francisco, Cal.; Philipps Bros., 42 Broadway, New York City; C. W. Hill Chemical Co., 320 South San Pedro Street, Los Angeles, Cal.

Map Scranton Coal District

A base map of the northern Pennsylvania anthracite region is being prepared by the Geological Survey. It will include the Scranton and Wilkes-Barre regions, extending from Shickshinny to Forest City. It will cover an area of 450 square miles. This map is to be used in connection with a report being prepared by N. H. Darton.

THANKS AMERICAN MINING CONGRESS FOR ARIZONA WORK

F. M. Murphy Points Out Advantages to Come from Meeting of Mining Men at San Francisco

The Secretary of the American Mining Congress is in receipt of the following letter:

MY DEAR MR. CALLBREATH:

I am a constant and appreciative reader of the MINING CONGRESS JOURNAL, and am pleased to observe that extensive plans have been made for the meeting to be held in San Francisco, in the near future. From what I have heard, a large attendance of influential and controlling factors in the mining business is assured, and much good will doubtless result.

Representative mining men as a rule, take an important part in all branches of business, and when they get together, the business pulse of the country is quickened and strengthened. All matters of substantial interest are sure to be considered. Attention will not be limited to mining, as men of the kind mentioned have no limitation when it comes to doing or talking business and considering matters of general interest, once their attention is diverted from many problems that have heretofore confronted them in the ordinary course of the particular business in which they are largely absorbed, giving their minds a chance to delve into the many important factors that go to make up a successful whole.

The meeting of the Mining Congress, so soon to take place, brings together a large proportion of the essential and controlling influences upon which the prosperity of our country depends. It is gratifying to find that business men generally, are waking up to the importance and necessity of giving a larger part of the time they have heretofore given to working out economics in their business, and forming combinations, to trying to find out what the trouble is that stands in the way of general prosperity throughout these United States, and are taking steps necessary to remove the difficulties, giving business a chance.

Here in Arizona, largely due to the influence and activity of The American Mining Congress, we have what is known as the Arizona Chapter of The American Mining Congress, having as its members the most influential and substantial citizens of our State,—men whose judgment is accepted by those who do not have the time, even if they have the inclination, to follow up as closely as is necessary the most important features of our industrial and political life. Steps are being taken to obtain and record for analysis, complete data upon which to determine the best line of procedure to be followed in the conduct of the affairs of our State, calculated to bring to each and every citizen his or her full deserts regardless of calling. When the statistics have been obtained, the Board of Directors, supported by the members of the Chapter, and those having the welfare of the State at heart, in the interest of all, will formulate a line of

procedure from which the best possible results can be obtained, eliminating the political schemer, always ready to concede and trade on all questions and points for personal advantage, while the business men, the taxpayers, including the day laborer, who needs and should have an opportunity to work at good pay, but can not get it under existing conditions, are footing the extravagant bills, in addition to being obliged to do the little business that is done under such embarrassing and harrassing conditions as to make prosperous conditions impossible. The business men can and must come to the front, and lead the way, as they have undertaken to do through the Arizona Chapter of The American Mining Congress.

Thanks to The American Mining Congress for helping Arizona get started on the right track.

F. M. MURPHY.

Prescott, Ariz., August 13, 1915.

Dr. Ashley Inspects Field Work

Dr. G. H. Ashley, of the Geological Survey, just has returned from an inspection trip to the Wellsville, Ohio, quadrangle where J. H. Hance and his party are working.

He also visited the Hulzdale, Pa., quadrangle, to secure certain details for work now being completed in the office of the Survey.

Dr. Ashley spent a few days in the office last month and then left for the Crossville quadrangle in Tennessee where the Survey is cooperating with the State Geological Survey.

LEAD AND ZINC PRICES CAUSE FLOOD OF LETTERS

The Bureau of Mines and the Geological Survey are being called upon to handle a large amount of correspondence originating with persons desiring information as to lead and zinc. The present high price of the metals has stimulated interest and all owners of prospects, showing an occurrence of either or both of these minerals, are anxious to secure additional information in regard to them.

CONTRIBUTES IMPORTANTLY TO CANAL TONNAGE

Traffic through the Panama Canal for the fiscal year ending June 30 shows many interesting features. It must be taken into consideration, however, that the canal was in operation only seven-eighths of the year.

Mineral productions contribute considerable tonnage to the total. Some of the most important items are nitrates, 651,948 tons; coal, 286,564 tons; refined petroleum, 252,428 tons; iron ore, 86,104 tons; copper, 49,799 tons; tin, 30,584 tons; copper ore, 20,740 tons; coke, 20,444 tons.

Mineral tonnage through the canal will increase greatly with the restoration of normal conditions in Europe.

TOPOGRAPHER'S WORK HIGHLY NECESSARY TO SYSTEMATIC MINING OPERATIONS

Basic Maps Must Be Made Before Geologists and Mining Engineers Can Work Intelligently and Accurately—Chief Geographer Inspects Mining Areas

Topographic maps have an important and intimate bearing on mining that often goes unrecognized. It is the foundation which must be laid before mining and other operations can be conducted intelligently. The topographer must do his work before the geologist can do more than make a preliminary reconnaissance. He is just as necessary to successful work on the part of the geologist as the preliminary work on the part of the geologist is necessary for accurate work on the part of the mining engineer, who follows the geologist into the new mining camp. The topographical findings are the mother maps so necessary to the work of engineers and geologists. They permit civil engineers to sit in their offices and plan trolley lines and locate railroads. They make it possible for geologists to go into areas and with rapidity and accuracy record the outcrops and the various other features necessary to their work.

PRECEDES GEOLGIST

Every year the chief geologist of the Geological Survey prepares a list of areas which are to receive attention by the geologists. This list is turned over to the chief geographer, who immediately takes steps to precede the work of the geologists by the making of topographical maps.

The value of these maps is indicated by the fact that the Geological Survey sells each year more than 500,000 copies to the general public.

The importance of topographical work was outlined clearly by Dr. George Otis Smith in a recent address. He said:

The foundation work of the Survey is its map making. It employs more than 200 topographical engineers and many more temporary field assistants, who are engaged in making topographic base maps of the United States, a work in which many of the individual States cooperate with the Survey. Over 2,300 of these maps, representing about 40 per cent of the area of the United States, have been published, and the mapping is progressing at the rate of about 20,000 square miles a year.

Although most of these maps are uniform in size, they are published on different scales, the scale depending on the need for greater or less detail of mapping in the region covered.

HOW MAP IS MADE

These topographic maps are printed in three colors, so as to distinguish clearly the three kinds of features shown. Black is used to indicate roads, houses, and names—the human features of the map—and blue is used to indicate the streams and lakes and other

water features, and brown is used to indicate the hills and valleys, whose elevations are shown by means of contour lines.

The topographic map is in effect an accurate relief model of the area mapped; there is no part of the area shown on the map whose altitude above sea level is not shown. It is a complete dictionary of altitudes for its entire area. The Survey's topographic map, taken as a whole, forming an atlas composed of thousands of sheets, is the detailed base map of the country, and when we consider that one of these sheets, the survey for which was made at a cost of \$3,000 to \$5,000, shows every physical feature of the area it covers, every streamlet and hill, every cross road and farm house in its exact relative position to all the other objects in the area, and that it is sold by the Government at the nominal price of 10 cents, many wonder that the Survey does not sell even more than the half million maps a year.

The area to be mapped must first be located on the earth's surface geographically. This location involves the determination of the exact position in latitude and longitude, by astronomic methods of a point on or near the area to be mapped, from which the location of all the other points are determined. In addition the exact elevation above the sea of certain selected points must be ascertained. Such elevations are based on a system of instrumentally surveyed lines—tens of thousands of miles of them—run through the country and connected with sea level. These lines ramify throughout the United States and range in elevation from the lowest point in the United States, in Death Valley, which is 267 feet below the level of the sea, to the summit of Mount Whitney, 14,501 feet above sea level, the highest point in the United States south of Alaska.

30,000 BENCH-MARKS

The permanent records of work of this kind are left in the country mapped in the forms of bench-marks—plates giving the elevation of the particular spot marked to the nearest foot. These are the iron posts you see by the roadside, or the round tablet set in the corner stone of the county courthouse or in a bridge abutment. The Survey has set 30,000 of these bench-marks, which are used as starting points for various engineering works—by ranches in planning, fog, alkali, and lack of water. His work may ing a petroleum pipe line route, by the sanitary engineer in building a city sewer, and by the mine operator in figuring the tonnage of ore or fuel yet in the ground.

The topographer's work may at times lie in pleasant places, but more often he must contend with the wind that shakes his table, cold that numbs his fingers, mosquitoes, wasps, or other insects that make life miserable, with snakes, rain, hard climbs, lightning, fog, alkali, and lack of water. His work may lie in a pestilential swamp, in impenetrable brush, where laborious cutting is necessary, or in lifeless deserts.

Following the topographer comes the geologist, who observes and locates on the topographer's base map the distribution of the various kinds of rocks. The work of the geologist is widespread and extends into every State in the Union and into Alaska and Hawaii, and as a result of geologic explorations and investigations made by the Federal Survey, geologic maps representing thousands of square miles are published each year. This work is done by about 150 geologists. Of what use are these geologic maps?

you may ask. They are applied to many uses. Maps of areas that include pools of oil and gas show the lay of the rocks deep below the surface and the places where further drilling is most likely to result in producing wells. Maps of coal lands show what areas are underlain by coal, and many of them indicate the depth of the coal below the surface. Such a map is accompanied by a report which, if it covers a coal field, gives the data for determining the tonnage of coal within any part of the area covered. Some of these maps show not only where water-bearing formations outcrop, but how deep they lie below the surface and how far a man must drill to get water. Maps of many mining districts show the localities most favorable for prospecting for ore deposits.

Where the geologist leaves off, the mining engineer takes hold, and in examining and appraising a mineral property the mining engineer's first inquiry is for the map and report of the geologist. The same may be said of the constructing engineer, whose first inquiry usually is for the map showing the rock structure or the character of the foundation upon which he must build.

IMPORTANCE EXPLAINED

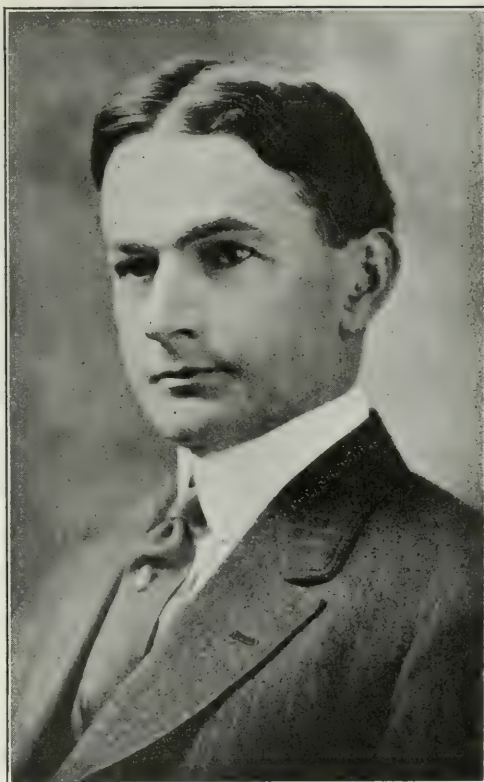
E. G. Woodruff also pointed out with great clearness the interest that should be taken in topographic maps by the mining engineer and the mine operator in general:

Few authors of treatises and papers on engineering subjects have given adequate attention to topographic maps. The statement applies especially to mining engineers in all branches. Topography, as suggested by the etymology of the word, means a detailed description of particular places. Written descriptions have been found less effective than the pictorial representations, therefore attempts have been made in various ways to picture the surface features of places. Lines and shading have been used, hachures drawn, and, finally, the contour topographic map. To a large extent this style of map is the result of the demands of engineers. It is designed to meet their needs far more than those of the man untrained in engineering. In fact, the average man obtains a better idea of the topography of an area from the hachure system than from contour maps. Since the maps have been made chiefly for the use of the engineer, they ought to meet his demands on the one hand, and, on the other, should be used by him to the fullest extent. Such maps, when properly made, accurately portray a portion of the earth's surface and should present the topography better than a personal examination of the area without a map could present it, because the person making such examination views only a limited portion of the surface at a time, and estimates distances only roughly with his eye.

Commonly, topographic maps are used as a general guide and accurate surveys are made subsequently as a basis for detailed work; but in many cases the second and more expensive survey is unnecessary, because the accurate location of points can be determined from data shown on topographic maps. In this work the map is used as a base and needed refinements can be added to it. It may be that the map available is drawn with 50-foot contours, whereas a 10-foot interval is required for the work in hand. If so, the map may be accepted and supplemental contours may be added.

THE CHIEF GEOGRAPHER

The topographic work of the Survey is under the immediate direction of the chief geographer. This position since 1908 has been held by Robert B. Marshall. Just at the present time Mr. Marshall is in the West inspecting the work being done in mining areas. As Mr. Marshall has been in charge of some very important pieces of work in the West, a word concerning his career will be of interest. He was born in Amelia County, Va. He was educated in the public schools at Richmond and at the George Washington University in this capital. He began work with the



ROBERT B. MARSHALL

Chief Geographer, U. S. Geological Survey.

Geological Survey March 16, 1889. His first work was as a field assistant in Colorado. He did work on maps covering Pikes Peak, Colorado Springs and other areas in that part of the State.

The following year, as a topographer, he had charge of a party which mapped the Two Buttes, Springfield and Albany quadrangles. The following year he was assigned to work in Montana. Among other maps, he made that of the Custer battle field.

In 1892 Mr. Marshall was assigned to California, where he directed the making of important maps at Yosemite, Banner Hill, Tamalpais, Palo Alto, San Jose, Mount Hamilton, Dardanelles, Haywards, Riverside, Mount Lyell, Santa Susana, Santa Barbara, Santa Paula, and other important quadrangles.

HEADS PACIFIC DIVISION

In 1893 Mr. Marshall was put in charge of all work in northern California. In 1902 he was given administrative charge of all work in California. The year following Oregon was added to his territory. In 1905 he was made geographer in charge of all work in California, Oregon and Nevada. May 1, 1907, he was appointed geographer in charge of the

Pacific division. This embraces the States of California, Oregon, Washington, Idaho, Utah, Arizona, and Nevada. January 23, 1908, he was made chief geographer in charge of the topographic branch, which position he still holds.

Mr. Marshall was a member of the Yosemite National Park Commission, created by the Secretary of the Interior for the purpose of changing the boundary of the park, as authorized by Congress.

The duties of inaugurating topographic service in the Hawaiian Islands were entrusted to Mr. Marshall in 1909. As chairman of the committee on the one-millionth-scale map he has done effective work. He was a delegate to the International Congress of Geographers held in Rome in 1912. President Wilson named Mr. Marshall as a member of the United States Geographic Board, appointed January 29, 1915. Mr. Marshall is a member of the American Society of Civil Engineers, the Association of American Geographers and other organizations.

GEOLOGISTS LOOK OVER SEVEN DEVILS COPPER DISTRICT

A number of mining engineers are looking over the copper deposits in the Seven Devils district of Idaho. Considerable interest in this region is being manifested, according to J. B. Umpleby, a geologist with the Geological Survey, who is making a study of the geological occurrence of ores in that portion of Idaho.

Strike Cuts Ohio Coal Output

Ohio's coal production in 1914 was nearly 19,000,000 tons. Its value at the mines was over \$21,000,000. Owing to the strike which prevailed during a portion of the year, there was a decrease of nearly 50 per cent in the production as compared with 1913.

Compiles Rock Analyses

Analyses of rocks and minerals from the laboratory of the Geological Survey just have been compiled by F. W. Clark, the chief chemist of the Survey. This work covers representative analyses since the beginning of the Survey's work.

California Has Borax Monopoly

California had a monopoly in the production of borax in 1914, according to the Geological Survey. All borax produced in the United States came from three mines. They are situated in southern California. The larger part has come for many years from the Lila C., of the Pacific Coast Borax Co., in the mountains of the Death Valley region of Inyo County.

MISSISSIPPI ROCKS IN KENTUCKY TO BE SUBJECT OF STUDY

In an effort to settle a scientific controversy with regard to the correlation of Mississippian limestones, Charles Butts, a geologist of the Geological Survey, is making an extended study of this matter in central and western Kentucky.

This work is an effort to correlate the subdivisions of Mississippian rocks surrounding the coal area in northern Kentucky and southern Illinois.

It is hoped that necessary data for the settlement of this question may be obtained within the next two months.

Mr. Butts will run a continuous geological section along the Ohio River bluff in the vicinity of Louisville, to the center of the coal fields. He also will examine a section southward from the Ohio River to central Kentucky, following some distinct stratum, if possible.

This work will necessitate extensive collections of fossils.

There is considerable obscurity in the identity of the lower carboniferous limestones in this portion of the Mississippi and Ohio Basins and its solution is of scientific importance.

Mr. Butts' work will be confined, mainly, to Meade and Breckenridge Counties, Kentucky. The Mammoth Cave in Kentucky occurs in these limestones, and the present study will include the Mammoth Cave region.

A MILLION WORKING DAYS LOST OWING TO STRIKES

Pennsylvania's bituminous coal production for 1914 amounted to practically 150,000,000 tons, according to the United States Geological Survey. The output was valued at \$16,000,000 at the mines.

Over 1,000,000 working days were lost during the year on account of strikes. The average number of men employed in bituminous mines during the year was 184,201.

Indiana Produces More Petroleum

Despite predictions for many years that the oil wells of Indiana soon would be exhausted, the petroleum production of 1914 showed an increase of nearly 40 per cent over the output of 1913. This is the first increase shown since 1904.

The 1914 production was nearly 1,500,000 barrels.

"PERHAPS THE GREATEST ADVANTAGES OBTAINED FROM A CONVENTION OF MEN IN THE SAME INDUSTRY ARE THE INFORMAL CONFERENCES THAT TAKE PLACE BETWEEN INDIVIDUALS."

MINE TAXATION IN ARIZONA IS ENTIRELY IN HANDS OF STATE TAX COMMISSION

Last Session of Legislature Failed to Re-enact Old Law or to Provide a New One—Mines and Machinery Will Pay Thirty-eight and Three-tenths Per Cent. of State's Taxes in 1915

During the years 1913 and 1914 the producing mines of Arizona were valued for assessing purposes by adding together one-eighth of the gross production for the previous year, plus four times the net for the previous year, and the value of the improvements; this was the method as laid down by the State Legislature under a law enacted in May, 1913, and under the provisions thereof this basis of reckoning the valuations was only for the collection of taxes for the fiscal years ending June 30, 1914, and June 30, 1915.

The State Legislature met last January and was in session in regular and special meetings about 120 days. During that time it failed to enact the old law or pass any mine taxation law whatever, leaving the matter entirely in the hands of the State Tax Commission.

The State Tax Commission under date of July 16 gives the following method used by that body (Zander not participating) in appraising and valuing the producing mines of Arizona for the year 1915:

METHOD APPLIED

From a tax statement furnished by the Tax Commission, containing information compiled and furnished by the several companies the net income from mine operation was obtained for the years 1912, 1913, and 1914. Also the net income from other sources, directly and indirectly connected with the operation of the property in question (but not including any interest on investments or income from property or investments owned without the State of Arizona) was secured. This aggregate average net income was capitalized at 15 per cent. The "capitalized value" obtained by the use of this factor (15 per cent.) being the full value of all the property in the State of the company or corporation in question. The value of the "mining property" being the difference between the full value as found after deducting therefrom the "assessed value as found by the county assessor and reviewed and equalized by the County Board of Equalization" of all other property not "classed" as productive mines and mining claims.

LIMIT OPERATING EXPENSES

The net returns above referred to were accepted as returned by the several mining

companies—save and except charges made for mine and plant depreciation and interest on indebtedness, which items were not allowed as an operating expense.

The factor of 15 per cent. was used on all mines in the class known and designated by the Commission as "copper mines."

The factor of 20 per cent. was used on all mines in the class known and designated by the Commission as "gold, silver, zinc and lead mines."

In case of some of the small producing mines where no net income was reported an arbitrary value was made by the Commission, based on all the information available and the "per-acre claim" basis used.

RETURNS OF LITTLE VALUE

A general reconciliation was observed at all times dependent upon the "physical condition" of the property being appraised, though it must be confessed that the information along this line submitted—save in two or three instances—was of but little value to the Commission, save perhaps as a future check, should a physical examination of the property become necessary. A further reconciliation was observed as between the appraisal made by the Commission and the 3-year average of the market value of such mining properties as are listed and dealt in by the public. The appraisal and assessment were in practically every instance much lower than the average market value.

During the year 1914 mines and machinery in Arizona paid directly 35.7 per cent. of all taxes, according to the figures of the State Board of Equalization.

Under the method adopted by the State Tax Commission for the year 1915 mines and machinery will pay 38.3 per cent. of all taxes.

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W. D. RYAN TELLS OF RESULTS FROM FIRST-AID TRAINING

Throughout the Middle West mine safety methods are going forward with leaps and bounds, according to W. D. Ryan, of the Mine Safety Committee of the Bureau of Mines. Mr. Ryan is stationed at Kansas City and has under his direct supervision the work done in that district.

Since May eighteen state first-aid contests have been held in Texas, Oklahoma, Arkansas, Missouri, Iowa, Montana, and Washington. Each of these was very successful and resulted in permanent organizations. These organizations have been found invaluable to keep up interest in first-aid and mine safety work.

It has not been many years since deaths often resulted from a simple fracture of the leg. Immediately after a man was hurt he was loaded into a mine car with all haste. To get the man out of the mine was considered the most important feature. As a result, oftentimes the fractured bone severed an artery and the patient bled to death from a comparatively minor injury. All this is prevented. Hundreds of miners who cannot speak English can adjust splints and apply bandages as cleverly as surgeons as a result of first-aid instruction. Nowadays when a leg is broken the patient is quickly extended on the floor of the mine and splints adjusted. He is removed from the mine as carefully as if in the hands of a trained hospital corps.

Deaths from ignorance and neglect have been reduced more than 50 per cent as a result of the educational campaign conducted by the Bureau of Mines. Half of the men who have been injured severely by electric currents are resuscitated.

In this way the long list of possible accidents can be gone over, showing the wonderful results from disseminating this class of education.

One of the most important effects of this work, Mr. Ryan declared, is generally overlooked. It is the reduction in the great number of accidents. There can be no figures covering accidents which might have happened. What is more, there is going to be a still less number of accidents in the future, he believes.

Mr. Ryan was called to Washington to consult with Director Manning, of the Bureau of Mines, and George S. Rice, chief mining engineer of the Bureau.

Chemists to Give Show

The National Exposition of Chemical Industries will be held in the New Central Palace in New York City the week of September 20. The exhibits will embrace American chemical products, apparatuses and processes, showing how intimately related to daily life are the chemical industries.

Working exhibits will be in continuous operation while the exposition hall is open.

ZINC IMPORTERS CONFER WITH TREASURY OFFICIALS

Satisfactory Agreement Reached for Appraising of Australian Ore Sent to This Country

At an informal conference held recently at the Treasury Department, in this city, between customs officers and a number of zinc importers, it was decided that the foreign market value of zinc ore, minus freight charges, duties and incidental expenses, is to serve as a uniform basis for customs appraisal in the United States.

The importers had filed protests against the varying basis of appraisal at different American ports. This was due to the different methods of arriving at the market value of imported ores. An agreement satisfactory to the importers and to the appraising officers was reached at the conference.

Large quantities of zinc formerly marketed in Belgium and Germany are finding their way to this country. Australia is a large producer of the zinc which was deprived of its European market.

The paragraph of the customs law covering the appraising of zinc ores reads as follows: "The actual market value or wholesale price of any imported merchandise which is not actually sold or freely offered for sale in the open markets of the country of exportation shall not in any case be appraised at less than the wholesale price at which such similar imported merchandise is offered in the open market of the United States. Allowances are to be made for the cost of transportation, and other expenses from the point of shipment to the place of delivery."

A commission not exceeding 6 per cent may be deducted, 8 per cent may be deducted for profits, and not to exceed 8 per cent for general expenses.

The zinc importers who conferred with Andrew J. Peters, the Assistant Secretary of the Treasury, in charge of customs, are as follows:

W. H. Coolidge, Jr., American Lead & Smelting Co., 55 Congress Street, Boston, Mass.; Wm. Lanyon, Robert Lanyon Zinc & Acid Co., Hillsboro, Ill.; John Hughes, special agent United States Steel Corp., 71 Broadway, New York, N. Y.; H. S. Austin, assistant comptroller United States Steel Corp., 71 Broadway, New York, N. Y.; Ernest O. Jacobsen, National Zinc Co., 2 Stone Street, New York, N. Y.; S. S. Stevens, American Zinc & Lead Smelting Co., 55 Congress Street, Boston, Mass.; A. D. Beers, New Jersey Zinc Co., 55 Wall Street, New York, N. Y.; M. F. Chase, Mineral Point Zinc Co., 1111 Marquette Building, Chicago, Ill.; Wilfred Schade, Century Building, St. Louis, Mo.; H. W. Ackhoff, care of G. W. Sheldon & Co., Consumers Co. Building, Chicago, Ill.; H. W. Gepp, general manager Amalgamated Zinc Ltd., of Australia, care of R. W. Cameron & Co., 23 South William Street, New York,

N. Y.; H. S. Kimball, president American Zinc & Lead Smelting Co., St. Louis, Mo., and A. S. McMillan, Edgar Zinc Co., St. Louis, Mo.

Labor Trouble Affects Production

Arkansas coal production in 1914 was close to 2,000,000 tons. Its value at the mine was over \$3,000,000.

Considerable trouble between workmen and employers took place during the year, which interfered to a considerable extent with the output.

Cryolite Imports Increase

Cryolite, which is not produced in the United States, entered the country last year in increasing quantity. The imports came from Ivigtut, Greenland. The value of the imported product was \$94,000,000.

Issues Report on Natural Gas

Chemical and physical properties of natural gas vary materially in composition throughout the United States, according to a technical paper on this subject which just has been issued by the Bureau of Mines. The authors are G. A. Burrell and G. G. Overfell.

Knopf in California.

Adolf Knopf, of the Geological Survey, left August 3 for California, where he will study the mining geology of the mother-lode district of California. He will specialize on a study of the mines in this region. They never have been studied in detail by the Government's experts.

Emmons Prepares New Report

W. H. Emmons is preparing a report on ore enrichment. This is an enlargement of his bulletin on sulphide enrichment which was published some time ago as Bulletin 529. It will be at least eight months before the new bulletin will be ready for distribution.

BURKINBINE MADE CONSULTING ENGINEER OF BUREAU OF MINES

J. L. W. Burkinbine, of Philadelphia, has been appointed a consulting engineer of the Bureau of Mines. Mr. Burkinbine is a son of the late John Burkinbine, who also was a consulting engineer on the staff of the Bureau. Mr. Burkinbine will continue the research work carried on for many years by his father.

PLANS COMPLETED FOR NATIONAL FIRST-AID CONTESTS AT FAIR

First-aid and mine safety work for the fall and winter have been outlined after a conference between Van H. Manning, Director of the Bureau of Mines, and George S. Rice, chief engineer of the Bureau.

There has been some rearrangement of the schedule of the eight mine rescue cars which are maintained by the Government. Steps have been taken to make more effective the personnel at the five stations maintained in the different mining regions.

At this conference, which was held in Washington, final arrangements were completed for the national first-aid contest which will take place in San Francisco September 23 and 24. Seventeen States will be represented by their teams, which were selected as a result of State contests.

Arrangements have been made for the erection of a chamber of coal dust explosion demonstrations. Some of the miners who will compete in the first-aid contest will use artificial breathing apparatus and do their work under the conditions of an actual explosion.

Through the kindness of the Pacific Coast Tank & Pipe Co., a wooden pipe, 6 feet in diameter and 120 feet long, has been supplied. This will give an ideal place to exhibit explosions of coal dust.

Metal Reports Completed

All the metal reports which go to make up the annual volume of mineral resources have been finished. Most of them already have been published in separate pamphlet form. Bound volumes containing all the metal and non-metal reports will be issued later in the year.

LIFE-SIZE PICTURE OF LATE DR. HOLMES HUNG IN BUREAU

A life-size picture of the late Dr. Joseph A. Holmes, director of the Bureau of Mines, has been hung in the directors' room at the Bureau in this city. The picture was purchased by the employees of the Bureau.

Produces 1,247 Tons of Asbestos

In 1914 asbestos production of the United States was 1,247 tons. Its value was \$16,810.

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THINKS LOUISIANA SULPHUR WILL NOT REPLACE PYRITES

During 1914 sulphur to the value of \$5,954,236 was marketed in the United States. This exceeded the value of the product marketed in 1913 by \$474,387. Statistics of actual production are not available, due to the fact that there is some objection to giving out the amount of stock on hand.

The value of the sulphur mined in the United States has risen from \$21,000 in 1880 to the present figure. In only one year was the 1914 output exceeded. This was in 1908, when the value of sulphur sold at American mines reached \$6,668,215. As usual by far the greatest part of the sulphur came from the mines of the Union Sulphur Co., in Louisiana.

Some discussion has arisen of late as to the use of American sulphur to displace pyrites. Despite the fact that some claim this would be possible if the price of American sulphur could be reduced to \$15 a ton, a very competent authority takes an opposite view. In a communication to the MINING CONGRESS JOURNAL, he says:

"I do not see how it would be possible for Louisiana sulphur to displace pyrites, except as you suggest in the manufacture of fuming sulphuric acid; even in this line and at \$15 per ton I doubt its economy.

"The sulphur producers cannot sell brimstone at one price to the acid maker and another price to the paper people who must use this article. We use in this country something over 1,000,000 tons of pyrites, which would mean about 500,000 tons of sulphur, so that if all of this pyrites business were substituted by brimstone it would only about double the consumption of the Louisiana product and much more than cut in half their profit per ton. You must also remember that most pyrites carries copper and other by-products which, to be taken out, must yield the sulphur for some purpose and the miners of this ore would not allow their outlet to be cut off by the sulphur producers in this country, even if they had to sell it at sulphur cost. All of the plants for ordinary acid making are equipped for pyrites and not brimstone so that an enormous investment would become obsolete and would have to be taken care of by sulphur producers, if they wish to substitute their material. I cannot see how any manufacturer could expect the Louisiana sulphur people to break their whole business in this way.

"All pyrites carrying copper, as most of it does, must look to the acid maker for an outlet and it can be sold at a price that would not justify the brimstone makers to compete with and thereby break the market in their regular lines."

PHOSPHATE BEDS IN BIG HORN MOUNTAINS ARE CLASSIFIED

Important investigations of phosphate in the Big Horn and Owl Creek Mountains of Wyoming, just have been concluded by D. Dale Condit, an associate geologist of the Geological Survey.

Mr. Condit's field work covered the south end of the Big Horn Mountains, and their southwestern extension in the Owl Creek Mountains. He examined the supposed phosphate lands said to extend throughout these ranges for the purpose of classifying the public lands.

Phosphates never have been mined either in the Owl Creek Mountains or in the Wind River mountains.

On this trip Mr. Condit traversed Glacier National Park and the Grand Canyon. He reports that there are more tourists visiting these scenic wonders than ever before.

Lake Superior Miners Meet

The twentieth annual meeting of the Lake Superior Mining Institute will be held at Ironwood, Mich., September 6-9. The first-aid demonstration will be held at Ironwood, after which excursions are planned to various points of interest. One day is to be spent on the Cuyuna Range. This will include a visit to the Minnesota School of Mines in the State fair. Business sessions will be held at Ironwood and Crosby, Minn.

Phalen to Deliver Address

"Conservation of Phosphate Rock" is to be the subject of the paper to be delivered before the Pan American Scientific Congress, by W. C. Phalen, of the Geological Survey.

Correlates Tertiary Flows

Important work in correlating tertiary flows and sediments of the middle and south fork of the John Day River, in eastern Oregon, just has been completed by D. F. Hewett of the Geological Survey.

Statistics near Completion

Work is nearing completion at the Bureau of Mines on statistics for metal mine accidents in 1914; quarry accidents for the same year, and accidents in metallurgical plants during 1913 and 1914.

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Recent Legal Decisions

MINING LEASE

The lease of a tract of land for the sole purpose of prospecting for mining coal and asphalt was on the condition that the lessee should occupy only so much of the surface land as might be reasonably necessary to carry on the work of prospecting, mining, storing, and removing the coal and asphalt mined; the lessee covenanted to commit no waste and to suffer no waste to be committed on the premises and not to use the premises for any other purpose than that authorized by the lease, nor suffer or permit them to be used for any other purpose and stipulating to pay a certain royalty on all coal and asphalt mined. Under the covenants of such a lease a lessee cannot, after sinking shafts upon the premises and extending tunnels into adjacent lands and mining and removing large quantities of coal through such tunnels and shafts, dump large quantities of shale and waste brought from such adjacent land upon the surface of the leased premises; nor can he use a large part of such surface with buildings and dwellings for the use of miners engaged in such outside mining operations; equity will prevent by injunction such use of the surface or the leased premises in violation of the covenants of the lease.

Sharum v. Whitehead Coal Co., 223 Federal, 282.

ENJOINING OPERATIONS

An injunction issued at the suit of a landowner enjoining a railroad company from boring oil wells on its right of way extending through the land of the complainant, on the ground that such boring and operating is a trespass and a disturbance of the oil under the land of the complainant adjacent to the right of way, may be dissolved on the execution of a proper bond of the railroad company, conditioned for the payment of all damages sustained by the complainant if a final judgment should be rendered in his favor.

Natalie Oil Co. v. Louisiana Ry. & Nav. Co., 137 La.—69 Southern, 146.

ROYALTIES ON OIL

Where a lease of lands for oil and gas provided that a certain sum shall be paid each year as a royalty on the gas produced from each well and marketed off the premises, and the lessee operates the lease, markets gas from wells thereon for a part of the year, and thereafter assigns the lease, the assignee, in the absence of a special contract, is not liable for royalties accruing on such wells, the

product of which was marketed from the premises before the lease was so assigned, regardless as of the particular date when such royalties became due and payable; but the original lessee alone is liable for the royalties accruing during the time he operated the wells and marketed the products.

Columbus Gas & Fuel Co. v. Knox County Oil & Gas Co. (Ohio), 109 Northeastern, 529.

OPERATOR'S LIABILITY

A complaint in an action for the death of a miner is sufficient where it avers that the deceased was ordered by the mine boss and his assistant to repair the entry in a particular manner and that the manner so selected was dangerous and known to be so, but the mine boss and his assistant nevertheless negligently selected such unsafe ways of operating when they could have selected a safe way of taking down loose slate and rock; and further averring that the deceased miner was bound to obey the orders of the mine boss and his assistant, and while attempting to perform the work in obedience to such orders, the loose slate fell on him and killed him. The statute of the State, regarding the duties of a mine boss, recognizes two ways of making such places safe, one by propping the roof at the dangerous place and the other by removing the loose stone or slate, and if the mining boss and his assistant negligently selected the unsafe way and ordered the miner to perform the work in that particular manner, and he was killed while obeying such orders the mine operator is liable.

Vandalia Coal Co. v. Alsopp. (Ind. App.) 109 Northeastern 421.

ASSIGNMENT OF INTEREST

Where the owner of an oil lease assigned one-half interest thereof to another person upon the consideration that the latter should bear all the expense of drilling, equipping and operating the oil wells to be drilled upon the premises; and thereafter such assignee assigned to a third person three-fourths of his interest in the oil lease upon the consideration that such last assignee should bear the entire expense of development of the lease, and covenanted to carry out the contract between the original lease and the first assignee; and thereafter such second assignee assigned a one-eighth interest in the lease to a fourth person, conditioned that such assignment should be binding upon the parties and was made subject to the terms and conditions of the lease as originally executed by the lessee,

such third and last assignee becomes liable to pay only one-eighth of the expense of drilling, equipping, and operating the lease and the wells drilled.

Cox v. Butts (Oklahoma), 149 Pacific 1090.

LOCATION ON ABANDONED GROUND

Where all of the rights of an original locator of a mining claim have been abandoned or forfeited and no claim of right is asserted by such original locator, his heirs, assignees or legal representatives, and the contesting parties concede that all rights that ever existed by reason of such prior location ceased to exist before any relocation of the ground was attempted, then the land was open to relocation, and was in fact open, unappropriated, public mineral land, open to location in the same manner as if it had never been located, and a subsequent location thereof made as an original location is required to be made, is effective as such, and the validity of such location cannot be questioned except for the same reasons that a location upon ground that had theretofore never been the subject of a location, can be questioned. In such case the locators are not required to state if the whole or any part of the ground was located as abandoned property because he was not in effect locating the ground as abandoned property but was locating it in the same manner as other public mineral ground is located.

Copper Queen Consolidated Mining Co. v. Stratton. (Arizona) 149 Pacific 389.

Ellamar Copper Report Finished

A report on the Ellamar copper district of Alaska has been completed and will be ready for distribution soon. It is by S. R. Capps and B. L. Johnson.

OKLAHOMA MINERS APPEAL FOR HEALTH SURVEY

Efforts are being made by mine operators in both the zinc and coal regions of Oklahoma to secure a health survey at their mines. This work is being conducted jointly by the Bureau of Mines and the United States Public Health Service at the mines in Missouri and Colorado.

Mines 72,000,000 Tons of Coal

West Virginia broke her own record of coal production during 1914. The State ranks second among the coal producers.

The production for 1914 was nearly 72,000,000 tons.

AMERICA'S MOST REPRESENTATIVE MINE OPERATORS WILL ASSEMBLE AT SAN FRANCISCO SEPTEMBER 20-22.

"TO MISS THIS YEAR'S CONVENTION OF THE AMERICAN MINING CONGRESS WILL BE ALMOST A CALAMITY TO ANY MINE OPERATOR."

MINING COLLEGE FIRST-AID TEAMS ALLOWED TO COMPETE

In view of the great interest manifested by first-aid teams from mining colleges in the third annual joint field meet, to be held by the United States Bureau of Mines, the American Mine Safety Association, and the California Metal Producers' Association in San Francisco, September 23 and 24, the rules committee has withdrawn the restrictions against the participation of such teams in the meet.

The ruling previously made that only teams from bona fide mining, smelting and milling operations should be admitted to the interstate contests of September 24, thereby restricting teams from mining colleges to participation in the demonstrations of September 23, has been modified to provide that such teams and teams from State departments or other institutions interested in safety in mining, but not concerned in mine operation, may compete among themselves on the twenty-fourth for a special prize for the most proficient team from an educational institution.

It is hoped that a special prize or cup may be offered as an award to the team winning in this special competition. It is believed that this modification of the rules governing the meet will result in the sending of a good number of teams from the various colleges and universities in the West.

Push Work on Phosphate Map

G. R. Mansfield, a geologist of the Geological Survey, has returned to Washington after two months' work upon the Montpelier, Idaho, and Wayan, Wyoming, quadrangles. These quadrangles represent a considerable portion of the western phosphate field. Owing to the increasing importance of potash, work is being pushed to complete the quadrangles.

CAN ANY MAN TRYING TO KEEP ABREAST WITH THE PROGRESS BEING MADE IN HIS INDUSTRY AFFORD TO MISS THE ASSEMBLAGE OF MINING MEN IN SAN FRANCISCO THE WEEK OF SEPTEMBER 20?

Recent Patents of Interest to Mining

Composition of matter and process of producing it, No. 1,129,109. This invention is by Frank Meyer, of Ouray, Colo.

Mr. Meyer states that the primary object of his invention is to produce an improved fuel in the form of artificially prepared blocks, commonly known as briquets.

Introducing this fuel he uses coal and coke dust, together with a binding agent, which consists of an extract of cactus in liquid form. This extract is obtained by tapping live cactus plants or by treating the crushed plant with boiling water. The cactus liquid presents an advantage over many binders in that it is in itself combustible as well as adhesive. Another feature claimed for the cactus binder is that the briquet is much less brittle than when other adhesive substances are used. The low cost at which cactus plants are obtainable throughout extensive sections of United States and Mexico is a further recommendation for its use as a binder.

In addition to being serviceable in the manufacture of briquets from coal or coke dust it is pointed out that the cactus juice also may be used effectively to form bricks of concentrates for smelting purposes. Other combustibles such as sawdust can be treated in the same manner.

USES SULPHUROUS GASES

Process for the recovery of metals from ores, No. 1,146,373. This invention is by Charles S. Vadner, of Salt Lake City, Utah.

Mr. Vadner claims to have devised a means for recovering iron and other metals from slag and to have found a means of utilizing the sulphurous gases as produced in smelting operations.

In discussing his invention, Mr. Vadner calls attention to the considerable amount of metals which are lost in slag. He also points out that enormous quantities of copper, iron, and other metals cannot be mined owing to the small amount of metallic content in the ore. With his process he expects to treat slag dumps and low-grade iron and copper deposits.

The processes by which it is intended to accomplish these purposes are highly complicated but in general the mineral matter is treated with smelter fumes containing sulphurous gases, in the presence of a solution containing at least one of the common chlorides leaching out the metals from the mineral matter, eliminating excess SO_2 gas by suitable means, passing the air through the solution, thereby precipitating iron and making possible its recovery.

PATENTS SCREEN ARRANGEMENT

Ore concentrator, No. 1,146,211. This invention is by Fritz O. Stromborg, of Salt Lake City, Utah. Mr. Stromborg's invention relates particularly to concentrators employing a plurality of screens mounted within a tank of water.

The primary object is to provide a simple and efficient means for supporting the screens so as to allow a vertical and longitudinal oscillating movement.

The secondary object is to impart a rather rapid movement to the screens when moved in one direction and for reducing the rate of speed when moved in an opposite direction.

The invention is a combination of a water tank, a crank shaft suitably mounted, a frame work, hanger bars, bars connecting the hanger bars forming a rigid frame depending into the tank; screens adjustably mounted and means for imparting movement to the frame.

MAKES GRADUAL SEPARATION

Magnetic separation of ore, No. 1,146,140. This invention is by Francis B. Dutton and Benjamin McKechnie, of Labanon, Pa. They have assigned their invention to the Pennsylvania Steel Co. The inventors claim to have devised an improved method of separating magnetic iron ore from material of a non-magnetic nature.

The desired results are obtained by causing the magnetic iron ore when in a powdered state to be acted upon by magnets. It is preferable to have the powdered ore suspended in water or other suitable fluid container. The action of the magnets must be gradual, which separates the particles according to their magnetic quality, that is, the purest particles are first separated. The method provides for bringing the mass gradually into the field of a number of magnets of substantially the same strength. The particles are removed as they are separated.

The apparatus for carrying out this method is apparently is simple and convenient.

REUSES IRON

Process of treating zinc-bearing materials, No. 1,146,075. This invention is by Woolsey McCa. Johnson, of Hartford, Conn. He has assigned the invention to the Continuous Zinc Furnace Co., of Hartford, Conn.

Mr. Johnson claims that he has devised a process relating particularly to the recovery of zinc either as metal or in the form of oxide from silicate slags, such as result from the smelting of lead ores and from the reduction of certain ores containing zinc and copper. Such slags are subjected to the reducing action

of iron in an electric furnace under proper conditions to volatilize the zinc. The results in slag are subjected to a reducing operation to separate a portion of the iron in the form of metal.

The inventor claims to have a cyclical process of treating a charge of zinc-bearing material low in sulphur and containing silicate whereby iron is recovered and in which the reduced iron is utilized to reduce further quantities of zinc-bearing material.

REQUIRES SPECIAL SOLUTION

Composition in process for extracting metals from their ores, No. 1,145,954. This invention is by James F. Williams, of San Francisco. He claims to have a process peculiarly adapted to the freeing of gold, silver, and platinum from silicious ores and placer sands.

The ore is first pulverized and screened. The pulverized ore is allowed to stand for hours in a special solution. The ore is run over amalgam plates.

One of the important features of the invention is the formula for the solution. It is prepared in two parts. One ounce of concentrated sulphuric acid is mixed thoroughly with 16 ounces of water to form the first part of the bath. Forty grains of potassium bromide is dissolved in 2 ounces of water to make the second part. The potassium promide solution then is added to the acid solution. This solution may be diluted with water to attain the proper strength for its specific use.

LAMP DOES NOT WIGGLE

Miner's lamp attachment, No. 1,148,889. This invention is by Frank A. Casteel, of Washington, D. C., and Robert M. Mayfield, of Kingwood, W. Va.

Owing to the fact that the means usually employed for attaching miner's lamps to the hat or cap admits of annoying play, an effort has been made to avoid this objection. The inventors claim they have avoided any looseness in attaching the lamp, while their device admits of the removal of the lamp with the greatest facility. The invention consists of a joint and bracket so constructed as to preclude any possibility of the swaying of the lamp.

CHANGES FEED AND GUIDE

Mining machine, No. 1,149,110. This invention is by Albert Vall, of Claremont, N. H. He has assigned his invention to the Sullivan Machinery Co., of Boston.

The inventor claims that he has devised a machine fitted with improved means for feeding and guiding it while performing the cutting operation.

MINIMIZES SLAG TROUBLE

Metallurgy of copper, No. 1,148,814. This invention is by Lawrence Addicks, of Perth Amboy, N. J., and Clarence L. Brower, of Chrome, N. J.

The inventors claim to have devised a

process especially useful in the refining and melting of copper. An expedient is offered to prevent the failure of silicious walls or bottom of a furnace. This is a result, it is pointed out, of inability to control the extent of erosion or slagging of silicious material. The inventors propose the refining of nearly pure copper by simple melting under non-reducing conditions and in the presence of only sufficient acid material to slag off the small proportion of impurities contained, while minimizing the formation of slag by avoiding contact with acid lining material, and subsequently polishing out the small proportion of cuprous oxide incidentally formed.

Rock Drill No. 1,148,600. This invention is by Clarence A. Dawley, of Plainfield, N. J. He has assigned his invention to the Ingersoll Rand Co. The object of the invention is to provide a pulsatory drill of high efficiency combined with lightness and portability. Mr. Dawley makes the following claim for his drill:

"The combination with a pulsatory tool having a cylinder and piston, of a pulsator having a cylinder and piston, one end of said pulsator cylinder being connected by a fluid conduit to one end of the tool cylinder, and the other end of said pulsator cylinder being connected to the other end of the tool cylinder, and passages joining the ends of the pulsator cylinder at each end of the pulsator piston stroke to equalize the pressures therein.

"The combination with a pulsatory tool having a cylinder and piston, of a pulsator having a cylinder and piston, one end of said pulsator cylinder being connected by a fluid conduit to one end of the tool cylinder, and the other end of said pulsator cylinder being connected to the other end of the tool cylinder, and passages bridging the pulsator piston and connecting the ends of the pulsator cylinder at each end of the pulsator piston stroke."

WILL NOT RUST

Process of smelting iron ore No. 1,148,700. This invention is by Florentine J. Machalske of Plattsburg, N. Y. He has assigned his invention to The American Ferroalloy Corporation of Plattsburg, N. Y. The invention relates to a new process of reducing iron ore and has for its object a process for producing a high-grade iron almost free from carbon, phosphorus, titanium, silicon, and manganese. It is also the intention to produce an iron which is very ductile and contains substantially no occluded gases. Mr. Machalske claims that the product takes a high polish and resists rust. He claims that the process is particularly useful in treating iron ores of the Adirondack region of New York. Further claims for the invention are:

"1. The improvement in the process of electrically reducing iron ore which comprises forming a basic charge composed of iron ore, graphite and a basic flux, subjecting this charge to an electric current and

maintaining the charge basic during the entire reducing process, the graphite being substantially equal to the amount of carbon theoretically required.

"2. The improvement in the process of electrically reducing iron ore which comprises forming a basic charge composed of iron ore containing titanium, and artificial graphite and a basic flux, subjecting this charge to an electric current and maintaining the charge basic during the entire reducing process, the graphite being substantially equal to the amount of carbon theoretically required.

"3. The process of electrically reducing iron ore which comprises forming a basic charge composed of iron ore containing phosphorus, and artificial graphite and a basic flux, subjecting the same to an electric current and maintaining the charge basic during the entire reducing operation, the graphite being substantially equal to the amount of carbon theoretically required.

"4. The improvement in the process of electrically reducing iron ore, which comprises forming a basic charge composed of iron ore containing manganese, and graphite and a lime flux, subjecting this charge to an electric current, and maintaining the same basic during the entire reducing process, the graphite being substantially equal to the amount of carbon theoretically required.

"5. The improvement in the process of electrically reducing iron ore which comprises forming a basic charge composed of 100 parts iron ore, 14 parts artificial graphite, and a basic flux, subjecting this charge to an electric current and maintaining the charge basic during the entire reducing process."

Other patents granted were:

No. 1,149,215 to C. O. Palmer, of Cleveland, Ohio, mining machine; No. 1,149,264, to W. H. Hubbard, of Salida, Colo., cooling ore, assignor to the Ohio & Colorado Smelting Refining Co., Denver, Colo.; No. 1,149,302, to J. Stanley, of Geary, Okla., dry and wet ore separator; No. 1,149,463, to F. Pardee, of Hazleton, Pa., apparatus for separating coal ore etc.; No. 1,149,495, G. C. Carson, Denver, Colo., metallurgical furnace; No. 1,149,502, C. E. Davis, Chicago, Ill., mining machine; No. 1,149,503, assignor to The Goodman Mfg. Co., Chicago, Ill.; No. 1,149,754, J. Harris, Sheffield, Eng., mechanical ore roasting and like furnace; No. 1,150,263, M. C. Godbe, Salt Lake City, Utah, ore leaching apparatus; No. 1,150,367, W. A. Hoffman, Hazleton, Pa., apparatus for treating ores; No. 1,150,669, J. A. Fleming, Globe, Ariz., Device for treating ores; No. 1,150,819, S. Galli, Mulbury, Kans., automatic releasing device for cars upon mining cages; No. 1,150,841, H. L. Doherty, New York City, method of smelting sulphid ores.

STUDY OF TINTIC DISTRICT, UTAH, IS BROUGHT UP TO DATE

Work just is being completed upon a report on the geology and ore deposits of the Tintic district of Utah. It is by Waldemer Lindgren and G. F. Loughlin.

This is an exhaustive technical report covering this important mining region, which produces gold, silver, copper, lead, zinc and bismuth.

It is the first report which has been issued upon this district since 1897 when Dr. George Otis Smith and G. W. Tower presented a similar paper.

Development in the mines of the district since that time has been very extensive, and the need for a further detailed examination has been apparent for some time.

The bismuth in this district has been developed recently. It is thought to have potential commercial value.

BUREAU OF MINES PREPARES BIG STATISTICAL VOLUME

What will be the most pretentious compilation of coal mine accident statistics ever issued by the Bureau of Mines will be published before the close of the year.

In one volume 150 tables dealing with fatalities in coal mines in the United States from 1870 to date, will be given. The information will be classified as to cause, calendar year and by States. The tables also will show the total number of mining machines in use, production, number of men employed, fatalities based upon the number of men employed, and fatalities per million tons of coal mined.

Every State will have production and fatality tables from the beginning of its inspection service to date. Many tables will be illustrated by charts.

This work is under the direct supervision of A. H. Fay, the Bureau of Mines Statistician. Mr. Fay has given this particular set of tables a great deal of study and expended upon them much hard work. He believes that they will be instructive in the prevention of accidents in mining.

Virginia Leads in Pyrite

Virginia leads other States in the Union in the production and value of pyrite. The production in this State amounted to \$336,662 tons in 1914, according to W. C. Phalen, of the Geological Survey. There is an increasing production of pyrite coming from New York, California, Illinois and Georgia. Wisconsin, Ohio and Missouri also are producers. Despite the domestic production, imports of pyrites during 1914 amounted to more than 1,000,000 tons.

"TO MISS THIS YEAR'S CONVENTION OF THE AMERICAN MINING CONGRESS WILL BE ALMOST A CALAMITY TO ANY MINE OPERATOR."



Two Members of a Bureau of Mines Rescue Team
Showing New Style of Helmet.

GEOLOGICAL SURVEY PLANS

LONG-NEEDED REFERENCE WORK

The Geological Survey is about to publish, under the title of "Lexicon of Stratigraphic Nomenclature of North America," a work for which there has been great need.

It is to be a lexicon of geologic names of all rock divisions, both sedimentary and igneous, in the United States, Canada and Mexico. They will be arranged alphabetically to conform in general to the plan of the proposed international stratigraphic lexicon.

Under each name, with exception noted below, the following data are to be given:

1. Age and geographic distribution.
2. Date of definition, with author's name and reference to publication.
3. Classification and limits, as originally defined, with statement of lithology and thickness.
4. Present definition, if still in use, and name that replaces it, if abandoned.

The information concerning formations outside of the United States will be limited to Nos. 1, 2, and the first part of 3.

Names approved by United States Geological Survey, names not acted on, and names abandoned by United States Geological Survey are to be indicated by distinctive type or otherwise.

ADDITIONAL DUTY ON

ANTIMONY IS SUSTAINED

The protest of G. W. Sheldon & Co., of New York, against additional duty on antimony has been overruled by the Board of General Appraisers. General Appraiser Fischer in his ruling in this case says, in part:

"On an importation of a quantity of antimony while the tariff act of 1909 was in force the entered value was advanced 20 per cent by the appraiser, from whose action the importers took no appeal. The merchandise, however, was not withdrawn for consumption until after the passage of the present tariff act. Under the provisions of the act in effect on the date of importation, the advance then made imposed no penalty on the importers, as their goods were then subject to a specific rate of duty, but under the present act, which was in force at the time of the withdrawal, the goods were subject to an ad valorem rate of duty, and if imported thereunder would undoubtedly, as conceded by the importers, be liable to a penalty of 1 per cent for each 1 per cent advance.

"In the light of these facts, the importers contend that no penalty can be legally imposed by reason of the advance made by the appraiser at the time of importation when no penalty attached thereto under the then existing law, and that to penalize the importation now would in effect be a retroactive and consequently an illegal act.

"For the reasons set forth we overrule the protest and affirm the decision of the collector."

DIFFUSION OF METALS WHEN IN

CONTACT SUBJECT OF REPORT

A preliminary report by C. E. Orstrand and F. H. Dewey has been submitted for publication to the Geological Survey. This report contains some of the first results reached in a series of experiments dealing with the diffusion of two metals when placed in contact. It will describe the movements of gold into lead and lead into gold when polished surfaces of the two metals are kept in contact at ordinary temperatures.

A number of metals are now in process of being tested. The deductions which may be drawn are expected to be of economic importance. The report will not be issued for six months.

"TO MISS THIS YEAR'S CONVENTION OF THE AMERICAN MINING CONGRESS WILL BE ALMOST A CALAMITY TO ANY MINE OPERATOR."

INTERIOR DEPARTMENT ACHIEVES IMPORTANT RESULTS IN OIL FIELDS

Van H. Manning, New Director of Bureau of Mines, Tells of Great Saving of Oil and Gas Which Has Been Made in Oklahoma—Prevention of Waste Difficult in Old Fields

Millions of cubic feet of natural gas and millions of gallons of oil have been wasted in the development of the oil and gas fields of the United States. When the Bureau of Mines was established in the Department of the Interior this enormous loss of resources had been recognized, but the Bureau was able to do little more than to call attention to it, because of a lack of funds for investigations. The need of adequate provision for systematic study of the problem was brought to the attention of Congress, which at its last session made an appropriation sufficient to enable the Bureau to organize a petroleum division in charge of W. A. Williams, chief petroleum technologist, and to begin investigative and educational work looking to an annual saving of oil and gas worth millions of dollars.

Congress also provided for the inspection and investigation of oil and gas wells on Indian reservations, a work which is being done in cooperation with the Indian Office of the Interior Department.

The bulk of the work of the new division of the Bureau of Mines is in the newer fields in Oklahoma and California. In the former State the Bureau of Mines employs inspectors to oversee drilling operations on Indian lands in order to insure the use of safe methods of drilling and closing wells and to prevent waste of oil and gas.

In regard to the general progress of this highly important work, Van H. Manning, the new director of the Bureau of Mines, makes this statement:

GOOD RESULTS EVIDENT

"Decided improvement has resulted from the work being conducted by the Bureau of Mines in the Oklahoma fields. Judging from a report I have just received I would say that it must be recognized that when considerable development has taken place in any oil or gas field, it is usually impracticable, and often impossible to do more toward preventing waste than to delay for a little the ultimate exhaustion of the wells. In Oklahoma there is a very large acreage of prospective oil and gas land, and ultimately many more fields will be discovered. So far as the conservation of gas is concerned, it is my belief that the plans of this office should be devoted more towards preventing waste in fields yet undiscovered than in fields now developed. In the latter most of the gas has already escaped and the amount of gas recoverable by the most stringent enforcement of remedies would not warrant the cost of applying them. The average

life of gas wells in Oklahoma, even when every effort is made to save the gas, is three years, and about half the gas is produced in the first year. Evidently the bulk of the gas escapes early in the life of an oil field and oil fields are developed regardless of the market for gas.

"However, I do not intend to convey the idea that it is not the intention to investigate thoroughly the older fields and to make every practicable effort to lessen waste of oil and gas therein. Moreover, investigation in the older fields will show how gas that accompanies oil may be best utilized, how the invasion of oil sands by water may be prevented or delayed, and how a larger percentage of the oil in the ground may be recovered.

ENGINEER'S RECOMMENDATIONS

"The Bureau's engineers have reached the following conclusions as to the conditions that must be considered in attempts to prevent or minimize loss of oil or gas in the Oklahoma fields:

"1. That practically all sands or other porous strata contain either oil, gas or water wherever penetrated by a well, and that oil, gas and water are closely interrelated in each field.

"2. That because all these substances are fluid and mobile, it is essential, in permanently preventing waste, to consider each deposit of oil or gas as a unit, and consequently, nothing can be accomplished by trying to remedy the conditions and prescribing methods to be used on any one property.

"3. That underground waste is more important and far more difficult to detect and to remedy than surface waste.

"4. That as Government leases are scattered throughout each field, little good can be accomplished by correcting, on departmental leases, conditions which are allowed to continue on adjoining properties over which the Government has no control. Therefore, co-operation with State authorities should be part of the Government's work under the Secretary of the Interior.

"5. That, because it will be impossible for the small force of oil and gas inspectors working under the direction of the Bureau of Mines and the Indian Office to supervise all well drilling on Indian lands, it is necessary to have the cooperation of the operators themselves which can be gained partly by supervision but principally by educational work.

"6. That little can be done in conserving the gas and permanently preventing underground waste in fields which are well developed, because the cost of changing existing conditions would usually be prohibitive, and much of the damage is irreparable.

"7. That effective conservation of gas is intimately related to the price of gas and to marketing conditions.

"Well logs, geological sections and diagrams showing conditions in the field have been prepared for the purpose of studying underground conditions, and for distribution among producers, in order to call their attention to defective methods of operating. Many diagrams have been distributed among the operators, and many requests for more have been received. It has been found that diagrams are much more convincing than anything written or spoken. They reach more operators, and their effects are wider.

STATE PROVIDES LAWS

"During the last year, the State enacted laws that empower the State corporation commission to regulate drilling for oil and gas, and at present the commission is considering measures that, it is hoped, will provide means for improving the methods on commercial lands. A conservation officer has been appointed by the commission, and regulations are to be issued.

"Probably the most important single feature of the work undertaken in Oklahoma is co-operation with the operator himself. It is absolutely impossible for the small force of Government inspectors to check up all the reports rendered by the departmental lessees, and to supervise all operations. Furthermore, the interests of the lessor and lessee are mostly in common, since both derive their profits from the amount of oil and gas brought to the surface and marketed. The greatest good can be gained by convincing the operator that certain methods will decrease the quantity of oil and gas which can be marketed, and others will increase it, and that the latter can be employed with a profit to himself. The work should be directed to the end that the operator will gain confidence in the Government inspectors and will consult them and keep them fully informed of conditions; and the inspectors, on the other hand, should act as a clearing house of information on operating methods, giving the operators the full benefit of the results of their investigations and those of the Bureau of Mines.

"There are three classes of waste in the oil fields. Probably the most important is the waste of gas; the waste of oil ranks second, and the waste of fresh water ranks third.

WASTE OF OIL

"In general the operator endeavors to prevent waste of oil to the best of his ability since oil is his principal source of profit. But through inefficient methods, carelessness, or lack of cooperation with his neighbors, deposits are not protected and much oil is left underground

which might have been recovered by better operating methods. The chief causes of this waste are unnecessary infiltration of water into oil sands, preventing the maximum amount of oil being extracted; the fact that during periods of low prices or during boom conditions the operators will neglect sands of relatively small production, and leave them unprotected; allowing oil to enter sands that previously contained no oil, and abandoning wells prematurely.

"I believe that the operators, once they are shown and convinced of the importance of this waste, will agree to preventive methods, especially if these can be had through associations, or through an authority like the Bureau of Mines, or through the State corporation commission, in order that all operators in the field shall adopt the same methods. This phase of waste is of very great importance and has been subjected to considerable investigation. It will require the compilation of a great amount of data throughout all the fields of the five civilized tribes to solve all the problems involved.

"Two processes which will affect the interests of the lessors have been coming into use in recent years. These are the extraction of gas and oil from oil sands with vacuum or suction pumps, and the so-called Marietta process which forces air under considerable pressure into some wells in order to drive the oil through the sands into other wells, to be extracted therefrom. In the first case the oil is drawn toward the wells to which the vacuum pumps are attached, and in the other case the oil is forced away from the wells into which the air is introduced. Operators then can suck or force the oil away from the lessor's properties. The vacuum process is being used in the oldest fields. I am informed that the so-called Marietta process has recently been introduced, and is being used, in the Chelsea pool, and, that the lessor of a departmental lease has an injunction in court to prevent its use in the manner desired by the operator. Both methods increase the total recovery of oil from the pool, and, if regulated, will work to the lessor's benefit. These methods are now under investigation.

"Investigations will be conducted with the view of increasing the recoverable percentage of oil and gas and of using methods best suited to protect oil and gas sands from the invasion of water—methods which will cheapen operations and thus indirectly add to the lessor's portion, since they may allow the drilling of smaller wells than have heretofore been economical.

UNDERGROUND WASTE OF GAS

"The underground waste of gas is particularly serious for the reason that the operator does not watch gas as he would oil; the loss is naturally more difficult to detect. Oil is so mobile that it escapes with great rapidity. A concrete case will show how rapid is the underground movement of gas.

"By reason of unsystematic casing, the gas from a deep sand in one well was allowed to

enter a shallower sand. It migrated through the sand a distance of 1,000 feet into another well. Within eight days the pressure in the second well had been increased by 75 pounds and the volume raised from 300,000 cubic feet to 1,500,000 cubic feet per day.

"It is evident that little good will result from correcting conditions on one property if adjacent leases are not operated properly.

"A large proportion of the operators had never known that any considerable waste of gas occurred underground until it was called to their attention by the Bureau of Mines and others. In particular, few operators had ever considered the matter of unsystematic casing until shown the diagrams illustrating it.

SURFACE WASTE OF GAS

"Surface waste of gas occurs when a well gets out of control or catches fire; when the operator deliberately allows the gas to escape because it interferes with drilling; when the operator drills through a gas sand and allows gas to escape while doing so, and when the gas which accompanies the oil is allowed to escape.

"Where the waste of gas is deliberate the operator deserves little consideration except when he is ignorant of means by which gas could be controlled. In such case it is necessary to show him how to control the gas by improved methods. Further, there are, now and again, conditions where it would be dangerous to life to shut in the gas, and much discretion must be used.

"Conditions regarding deliberate waste of gas throughout the State have improved very greatly, and it is believed that there will be few such cases in the future, especially if, under the new conservation law of the State, it is found practicable to pro-rate the gas.

"Where gas wells get afire or out of control, the operator is at fault only to the extent that occasionally he may be careless. Usually he is found to have insufficient knowledge of how to handle such cases. Occasionally, however, a fire or a wild well may be unavoidable and exceedingly difficult to handle.

"In conclusion I can state on the basis of reports at hand that the investigations of the Bureau of Mines have disclosed much waste of gas in Oklahoma fields, probably the most important being underground, and improvement in operating methods is highly desirable.

"Most good can be gained from educational and cooperative work. Much work has already been done and the attitude of the operators is rapidly improving.

"The Cushing field, as well as most of the other developed fields had, before this work was started, reached a stage that made possible only a prolonging of the life of wells, not a prevention of waste."

Thorium Discussed in New Paper.

Due to an increasing demand for thorium and mesothorium the interest in these min-

erals as well as in monazite has increased. Many interesting and useful facts with regard to them is brought out in a technical paper just issued by the Bureau of Mines.

Most of the monazite imported in late years has come from Brazil, where the mineral occurs in the beach sands along the coast of certain states and where it could be mined more cheaply than from inland placers. The mining of monazite in the United States has been practically at a standstill since 1906, especially since the price for thorium nitrate was reduced by European manufacturers to such an extent that it could be imported more cheaply than it could be made here, and this in spite of an import duty of 25 per cent. ad valorem on the salt. In former years, especially previous to 1906, there existed considerable activity in the monazite belt of North and South Carolina and many hands were employed to mine the mineral. Since then practically no mining of this mineral has been done in these and other states where monazite occurs. It is believed that monazite can be mined in this country more cheaply than heretofore, provided more modern means are employed.

Mesothorium can be obtained as a by-product from thorium nitrate manufacture and this may help the American manufacturer to utilize domestic resources at least to some extent.

The paper contains a full description and references to occurrences of the mineral in this country and the methods used in the mining of monazite sands are thoroughly discussed. The best methods for the separation of monazite from other heavy sands are given, together with flow-sheets and other technical details.

A short outline of analyses for thorium is given and the methods employed in the chemical manufacture of thorium nitrate and mesothorium are referred to. The complete history of the development of this industry is of interest and is brought out in detail. It is of further interest to know, for instance, that in spite of the wonderful development and increased use of the metal filament lamp the consumption of incandescent gas mantles has increased.

Valuable points for the examination and valuation of monazite deposits are outlined in the paper. Monazite is found in the states of North and South Carolina, in Idaho and in the black sands of the Pacific slope.

Louisiana Oil Output Increases

Louisiana has been increasing its petroleum production every year until the total has reached 14,309,435 barrels. During 1914 there were 566 wells drilled in the State, of which 66 per cent yielded oil.

Discusses Aluminum Recovery

A paper upon the recovery of aluminum from aluminum scrap is being prepared by H. W. Gillette, for the Bureau of Mines. It is probable it will be ready for distribution within three months.

COLORADO LEADS IN INCREASED GOLD PRODUCTION

Idaho Makes Largest Gain in Silver Production—California and Arizona Make Good Increases

Director of the Mint Woolley has given out a statement showing that the total gold production of the United States for the calendar year 1914 was \$94,531,800, and that the commercial value of the silver produced in that year was \$40,067,700. The figures contained in this statement were compiled jointly by the Bureau of the Mint and the Geological Survey, and are available for publication two months earlier than were similar figures a year ago. The compilation was hastened because of the extraordinary interest at the present time in the question of the gold supply.

The production of gold was greater by \$3,647,400 than in 1913, and the production of silver was 5,653,600 fine ounces (\$3,126,400) greater.

The decrease in the gold production was mainly in two States—Nevada, \$441,200 and Utah, \$193,300, while the increases were as follows: Colorado, \$1,792,700; Alaska, \$1,345,900; California, \$1,010,600, and Montana, \$822,700.

The largest gain in silver was in Idaho—\$1,712,500 (3,096,700 fine ounces). California gained \$331,400 (599,300 fine ounces); Arizona, \$291,700 (527,500 fine ounces); Alaska, \$276,100 (499,200 fine ounces); Utah, \$243,200 (439,700 fine ounces). The production by States was as follows:

State or Territory.	Fine ozs.	Value.	Fine ozs.	Value (Commercial).
Alabama.....	595	\$12,300	300	\$200
Alaska.....	800,471	16,547,200	865,900	478,800
Arizona.....	221,020	4,568,900	4,439,500	2,455,000
California.....	1,028,061	21,251,900	2,020,800	1,117,500
Colorado.....	962,779	19,902,400	8,804,400	4,868,800
Georgia.....	813	16,800	100	100
Idaho.....	57,431	1,187,200	12,573,800	6,953,300
Illinois.....			1,900	1,200
Maryland.....	10	200	100	100
Michigan.....			415,500	229,800
Missouri.....			60,000	33,200
Montana.....	200,446	4,143,600	12,536,700	6,932,800
Nevada.....	558,064	11,536,200	15,877,200	8,780,100
New Mexico.....	58,974	1,219,100	1,771,300	979,500
North Carolina.....	6,303	130,300	1,500	800
Oklahoma.....			6,200	3,400
Oregon.....	76,887	1,589,400	147,400	81,500
Philippine Islands.....	53,179	1,099,300	10,300	5,700
Porto Rico.....	135	2,800		
South Carolina.....	155	3,200		
South Dakota.....	354,782	7,334,000	179,800	99,400
Tennessee.....	309	6,400	102,800	56,800
Texas.....	426	8,800	574,700	317,800
Utah.....	163,362	3,377,000	11,722,000	6,482,300
Virginia.....	15	300	1,500	800
Washington.....	28,435	587,800	341,300	188,700
Wyoming.....	324	6,700	100	100
Total.....	4,572,976	94,531,800	72,455,100	40,067,700

BEST REPORTS ON TUNGSTEN ARE BY GERMAN AUTHORS

Considerable interest has developed in tungsten since the war. There is a scarcity of American literature on this metal, its ores and its reduction. The most complete work on the reduction of tungsten ore is that of Hans Mennicke. It is entitled "Die Metallurgie des Wolframs." Heinrich Leiser also has written a splendid report on "Wolfram." Both of these works are in German. A rather generalized account of the manufacture on a large scale of tungsten and ferro-tungsten is given in an article in the *Engineering and Mining Journal*, volume 90, 1910, page 959. It is entitled "Manufacture of Metallic Tungsten and Ferro-tungsten." It is by L. R. Pratt.

Reports on Marketing of Ore

Essentials of the mineral side of metalliferous work are discussed in detail in a report just issued by the Bureau of Mines. Charles H. Fulton is the author of the paper. He brings out many interesting facts with regard to the complex system through which ore passes from the mine to the plant where it is treated finally.

Marble Report Coming Out

A very pretentious report upon marble quarries is being prepared for the Bureau of Mines by Oliver Bowles. It is well illustrated and contains a large amount of interesting data based upon visits to practically every quarry in the United States.

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EDITORIALS

PROFIT SHARING ANALYZED; NECESSITY OF COOPERATION

Any adequate system of profit sharing in the end must lead to loss sharing as well. In the cooperative operation of a business enterprise the use of the capital requires a fixed charge, which must be paid first. Afterward the workers, upon some equitable basis, may divide the profits. A partnership in profits alone, leaving the losses to be borne by capital, is not only inequitable, but certainly would prevent investment and drive capital from the field of hazard. The wage system was devised to prevent just this situation, and until labor is willing to take its share of the inherent risks, it undoubtedly will continue as the ruling system for the conduct of business enterprises.

So long as the wage system shall prevail continual readjustments of the scale will be necessary. The wages paid should represent as nearly as possible labor's proper share of the estimated profits. This does not apply to any particular business, but to all lines

contemporaneously employed in the production of articles reaching a common market.

Labor naturally seeks the highest wage market. This depletes the lowest wage market. An increase of wages becomes necessary if any labor is to be available.

The profit and loss sharing system is simply a partnership in business. The profit sharing system is an effort, not only to approximate the proper wages, but also is an incentive to efficiency. The latter reason usually is dominant.

Operation by lease of many metaliferous mines in the West is largely an effort to equalize earnings in properties which do not pay enough to justify the current wages. At least, owners are not sufficiently certain of the value of the production, to justify guarantee of the current wage. Labor, no matter what its temporary attitude, in the end must be paid from its own earnings. Temporarily it may be paid from an increasing deficit which will bring the principal to *bankruptcy*. *Labor is entitled to its full share of production and must be satisfied with its share.* To get more than its share in the end takes from it the machinery of production which is supplied by *capital*. Labor under present conditions is as helpless without capital as capital is without labor. In union only is there strength.

RIGHT OF APPEAL FROM LAND OFFICE DECISIONS

It is the prime right of every American citizen to go to law. It is because of the existence of this right that each individual citizen is willing to surrender his right to protect himself. Thus he makes himself a member of organized society.

Wherever this right is denied, we create an excuse for lawlessness.

One of the very few instances in which this right is denied to American citizens is illustrated by a decision of the Interior Department of the Federal Government, a synopsis of which was given in the August number of the MINING CONGRESS JOURNAL.

The case referred to is entitled "The

United States *vs.* The Pacific Midway Oil Co., et al. The defendant in this case, according to the record, had spent more than \$900,000 in developing the property under the provisions of our mining laws.

We do not presume to pass upon the justice of this decision, but we do insist that the defendants in this case, after spending nearly a million dollars in the development of the natural resources of the country, should be entitled to a hearing before an unbiased tribunal. It may be contended that the Interior Department, which is the final arbiter of this and similar questions, is such a tribunal. An examination of the facts may demonstrate that the United States Government is a party in interest to this controversy and that any administrative arm of the Government is charged necessarily with the interest of its principal.

DEVELOPMENT OF LAND LAWS

It is interesting to trace the development of the conditions which have brought us to the present status. Originally the Western territory was considered by all to be of doubtful value and by many to be a direct burden upon the Federal Government. Later it was found to possess value, but to recover that value large and expensive development was necessary.

In order that this might be accomplished it became the policy of the Government to offer the reward of ownership to induce settlement through which it might secure the development of its natural resources. For this purpose liberal homestead laws were enacted for its agricultural lands and more or less liberal laws were created to protect the rights of discoverers of minerals.

During this period it was the policy of the Federal Government to pass its land into private ownership as rapidly as possible, due regard being observed for other citizens who might have a right to claim bounty of the Government. The principal purpose was development and settlement.

THE LEASING SYSTEM

A few years ago a new theory was developed having for its purpose the per-

petuation of the Government's title in these lands. They are to be leased for the purpose of development, but a part of the royalties to be derived therefrom goes into the Federal Treasury. In anticipation of the carrying out of this proposed plan large areas of coal, oil, and phosphate lands and water-power sites were withdrawn from public entry.

Before this new policy was adopted the Interior Department could act without bias because it was not called upon to do more than see to it that the mineral land laws had been observed in the steps leading up to the application for patent and that the rights of other applicants were given due consideration. In other words, any contest for a patent before the Land Department was an issue between contesting parties asking for the same land. The Government had no other interest than to see that substantial justice was done between the contending parties. Had the above case been between The Pacific Midway Oil Co. and some other company asking for a patent it would have been eminently proper that the Interior Department should sit as a final arbiter in the premises. But when, as in this case, the contest is between the Government itself and the applicant, more than a declaration of fairness will be required to convince the public that the applicant has had a day in court. In such cases it would seem but fair that the applicant have the right to an appeal from the decision of the Interior Department to some court of competent jurisdiction.

THE DISTRIBUTION OF WEALTH

Since the dawn of civilization, the distribution of wealth has been a dominant question. Conditions have become more difficult as wealth and the means of wealth-production have become more complex. Philosophers and economists have devised various complicated and divergent plans by which the profit of production could be distributed equitably. The very divergence of these various plans proves that all but one, if not all, are inadequate. Each may have had some element of merit. Even

though the merits of all could be combined into one plan, still the execution of that plan must be brought about by human agencies, so diversified and antagonistic as to make agreement absolutely impossible.

The individual can solve his own problem in his own way only when unhampered by the relations of society. Each individual not so hampered probably would work out his own destiny in accordance with his own notions and ability. Under modern industrial conditions this is so impossible as to make its consideration entirely futile. The struggle of each individual member of society to better his condition is not only proper but essential to human advancement. It is therefore unwise, as well as useless, to condemn the individual for striving to better his condition. Such effort, however, must be made without violation of the rights of others. Any violation of the laws of society not only must be condemned but must be suppressed unless we are willing to sacrifice the whole bulwark of organized government.

LAWS MUST BE RESPECTED

The rules which now protect society represent the wisdom and the experience of the ages and most nearly represent the will of that public through which they have been developed. This does not prove their perfection, but only that, so far, they are the best which the majority could agree to tolerate.

In a complex society the least of evils frequently must be chosen. To bring public sentiment to the higher plane of thought is to make possible the acceptance of more complete rules of society. Law, the rules of society, represents those abstract principles of justice which have so far been accepted. The general violation of these laws means the destruction of government and the society which it protects. The complete overthrow of government has been the means through which some reforms have been made effective. These examples frequently, if not always, have brought untold suffering to the reformers, who paid altogether too dearly for the improvement by which others benefited,

but which, as a rule, were not available to those who made the sacrifice.

In the struggle for better conditions the rules of society must be respected, if those who make the sacrifice expect to profit by the victory. In order that the rules may be changed in an orderly way it is necessary that popular sentiment upon the subject shall be so modified as to bring the majority to favor the proposed change.

INDUSTRIAL DISPUTES

So long as capital and labor, for instance, work along separate lines progress will be slow. The experience of the last year in the settlement of industrial disputes has not been of a hopeful character. It can be doubted whether any progress has been made. The number of industrial disputes accompanied by violence and bloodshed is almost too large for enumeration. No one can predict with any degree of accuracy what the remedy or remedies are to be. It seems certain that, whatever the remedies, they can only be made effective by the cooperation of the conflicting elements and with the consent and perhaps the active assistance of the general public, which in the end pays all wages engaged in production. The shocking loss of life through labor disputes, the enormous loss in property destroyed, the burdensome expense upon State government in the maintenance of its militia in efforts to preserve order, and the intense bitterness between elements which should be working in harmony, to say nothing of the increased cost of production which later must be paid by the consumer, each and all call and call loudly for some different method of solution.

TAXPAYERS WILL ASSERT RIGHTS

The conflicting elements, employer and employe, should settle the question. Is some movement possible which will bring together the representatives of both sides in these disturbances? It is necessary that they agree upon principles which each side will respect. If they fail to agree, the general public will take control and settlement will be forced. For instance, the taxpayers of Colorado,

placed under a burden of more than a million dollars of indebtedness because of its labor wars, will not permit a repetition of those conditions. The taxpayer and the consumer have rights which are entitled to respect and they have the power to command it. The parties in direct interest should cooperate along intelligent lines. Can such action be hoped for? The MINING CONGRESS JOURNAL will gladly open its columns for a discussion of this question.

USE OF ILLUSTRATION MISTAKEN FOR CRITICISM

A prominent member of the American Mining Congress, residing at Portland, Oreg., takes exception to the editorial in the August number of the MINING CONGRESS JOURNAL, under the title of "The Responsibility of Service," in the following language:

I am surprised to notice in the last issue of the MINING CONGRESS JOURNAL your bitter attack upon Mr. Bryan. I do not understand that it is a part of the duty of the American Mining Congress or its official publication to make a gratuitous assault upon one of the foremost American citizens and leaders in public thought. It seems to me that the JOURNAL will find abundant labor in advancing the true interests of the Congress and should not find it necessary to invite antagonism and dissension. I can conceive of no reason for the attack upon Mr. Bryan unless it is born of a fear that his efforts may, sooner or later, bring to a close the present wholesale slaughter of our brothers in Europe and thereby incidentally reduce the artificial price of certain products produced through the mining industry.

From the writer's viewpoint, his criticism is absolutely just and well taken, but the JOURNAL denies any intention of assaulting or even criticizing Mr. Bryan for the sake of criticism.

We called attention to Mr. Bryan only to illustrate by the most brilliant example possible the growing tendency toward inefficiency in service. This was referred to in the editorial in the following language:

This is said not in criticism of Mr. Bryan personally, but of a method of thinking so dangerously prevalent that even Mr. Bryan, with his high ideals, could even unconsciously become a vic-

tim of its insidious influence, and so prevalent that this exhibition in high place called forth no public disapproval.

Mr. Bryan, in defense of his position, stated that notwithstanding the absences for which he was criticized, he had been at his desk more hours than had his predecessors in office.

We have no doubt of the truth of this statement and its very truth emphasizes the point in issue.

If the men who hold the higher positions either in public life or in large industrial enterprises can shirk their responsibilities and still draw their salaries, why should the men in the ranks be expected to do more than is necessary to hold their jobs?

The time when all wage-earners from public officials and railroad presidents down to the laborers in ditches are working for "sundown and wages" will witness the downfall of American industrial supremacy.

We believe the future industrial prosperity of this nation depends upon the efficiency of labor. Germany's wonderful industrial power is based upon the frugality, the industry and the efficiency of her people. As time goes on, the industries of this country will need to compete not only with German efficiency but with Oriental efficiency and unless, as a people, we recognize the necessity of the highest efficiency, we shall fail in that competition.

It is the highest possible compliment to Mr. Bryan, the writer feels, that his short-coming is regarded as the most striking illustration of the principle involved.

CUT IN APPROPRIATION SHOWS POOR JUDGMENT

When Congress clipped \$50,000 from the appropriation of the Geological Survey, it did not realize that this action would make it impossible for a number of the Government's expert geologists to do work in the field. Fifty thousand dollars will do a great deal of field work which is such an important portion of the work in a country with areas so vast as the United States. The mining industry suffers from this interference with

the work being done for its advancement. On the other hand, no economy is effected. In fact, the curtailing of the appropriation of the Geological Survey is considered, by persons in a position to know, as a splendid illustration of being "penny wise and pound foolish."

Fortunately, several of the field geologists had accumulated a certain amount of field data which needed to be worked up for publication. For this reason the loss of the appropriation for one year is not as serious as it would be if continued for another twelve months.

As a result of being unable to send a number of geologists to the field this summer, a general "clean-up" is taking place in the Washington office so that all the experienced field geologists will be ready to go into the country the minute the next appropriation is available.

Another benefit accruing from the enforced stay of many geologists in Washington this summer is quick handling of the ever increasing volume of correspondence. The Survey office force on previous years has been almost overwhelmed in its efforts to handle the correspondence during the absence of the field men, who have expert knowledge on many subjects concerning which the public makes inquiry. In the course of their work these men have opportunities to become intimate with many localities. It is a practice in the Survey, during the winter, to have such inquiries referred to the field man who may be best acquainted, by reason of his experience, with the area concerning which inquiry is made.

Previous to this summer, it often has been necessary to delay replies to this type of correspondence which the Survey does not regard as a matter of clerical routine. This class of correspondence is regarded as deserving and demanding a consideration of scientific specialists.

It is the ambition of the Survey to keep it preeminently a field service with headquarters in Washington rather than merely a Washington bureau. In this connection, it is recalled that all four directors of the Geological Survey, King, Powell, Walcott, and Smith, made their reputations as field geologists in the West before assuming official direction of the service.

INCREASING PRODUCTION

COSTS ENDANGER ALL

We call special attention to a letter from Courtenay De Kalb, appearing elsewhere in this issue, which calls attention to a vital question—one which will command the attention of all public-spirited citizens. Even now the pinch is beginning to be felt as the demand for copper and spelter is become less acute, while the increased production which followed the extraordinary price of these metals finds itself unable to secure the price which stimulated the increased output.

While the general business conditions promise steady improvement, this promise is only justified by production costs, which will enable the product to be sold in competitive markets.

The general tendency toward increased cost of production, through demands for higher wages, increases in freight rates, increased taxation and increased cost of supplies, will necessarily make competition harder to meet unless increased efficiency shall absorb the difference.

This, under present conditions, is hardly to be hoped for.

The State of Massachusetts has awakened recently to the fact that the cost of supporting her government for the year 1915 is nine and three-quarter million dollars, an increase of a million dollars over the expense for the year 1914, and that the 1915 governmental expense is approximately three times greater than the cost of maintaining its government fifteen years ago. In every direction we meet increasing expenses not only in higher prices but in greater and more varied consumption.

Any adjustment of the labor question should provide such a wage as will enable the industrious, frugal man, during his working years, to support his family as befits his station in life, educate his children and provide support for the non-productive years of his later life. Anything less than this is unfair to the laborer; more than this is unjust to the consumer. It is not a question of how many dollars the wage-earner receives, but of how much he shall have remaining

after he has provided the necessities of life. A cost of living so high as to absorb the entire wages paid, leaving no possible saving is no better to him than a very small wage, and such lower cost of living as will enable him to accomplish the same results.

We sincerely hope that Mr. De Kalb's prediction that the laboring classes "will beg for work as never before, and when no man can give it to them" will not come true.

It is hardly possible, however, for anyone to predict with certainty what conditions will exist when the great reorganization of the world's finances and industries shall follow the ending of the war. Certain it is that more cordial relations, more sincere cooperation between employer and employe will be of untold advantage in every possible situation.

We believe that the statement of Mr. De Kalb that the American Mining Congress "is in reality the most democratic of mining organizations" is correct. It will be more than glad if it can be used as a medium through which better relations between labor and capital can be established.

We hope to hear from others concerning this important question.

THIS ISSUE GOES TO EVERY OPERATING MINE

This issue of the JOURNAL will go into the office of practically every operating mine in the United States, including Alaska. So far as news matter is concerned it contains no more information than is carried by the regular monthly JOURNAL.

It is of the utmost importance that mining men be kept advised of the work being done in their behalf by the government. Washington also is the center of various other activities with which mining men should never be out of touch.

For years we have been impressed with the thorough manner in which the lumber papers have covered the Washington field. The Forest Service is combed each week by these papers and the lumbermen of the country are fully

cognizant of the work being done with public money in the interest of their industry. The same publicity is given the work being done in behalf of the farmer. In fact all industries pay close attention to news from this important center.

It is a matter of considerable expense to keep in constant touch with the widely scattered sources of information in Washington. The technical mining journals have other important ground to cover. This is one of the reasons which caused the American Mining Congress, at the beginning of this year, to expand its occasionally-published bulletin to members, into a formal monthly publication. This not only gives a ready medium for the chronicling of events of importance in the Mining Congress work but gives us the opportunity of furnishing the mining industry the first comprehensive news service covering the government's work in the interest of operators of mines.

There is more than \$1,000,000 spent every year by the government with the idea of advancing the mining industry. It is essential that every mine operator be kept closely informed of the work being done with this money. The appropriations for mining purposes are wisely administered. A tremendous volume of work is done each year. The mining men of the country should know just as much about the progress of this work as is possible. This is so evident that we wonder why an independent mining paper was not started here years ago. THE MINING CONGRESS JOURNAL is attempting to give this necessary service. As more advertising support is given the JOURNAL it will be possible to better this service.

In addition to keeping the mining public advised as to the work being done with the \$1,000,000 the nation furnishes for the advancement of the industry the JOURNAL covers the daily work of the Interstate Commerce Commission. Traffic matters form an important part of modern business. This feature alone makes the JOURNAL a necessity for every mining man who is shipping or expects to ship ore. Patents with a bearing on mining are of great interest. They are covered in full in each issue of the Jour-

NAL. The Land Office with its far reaching decisions is the source of vital information to many mining men. The Supreme Court, the Departments, Congress and other centers of developments with which the live, successful mining man must keep in touch are covered in detail. No progressive mining man can afford to be without the service offered by THE MINING CONGRESS JOURNAL.

We want you to keep in mind the fact that THE MINING CONGRESS JOURNAL is the property of the members of the American Mining Congress. They are interested in its success. They watch closely the advertisers who patronize their own paper. It goes without saying that, other things being equal, they will buy machinery and supplies from those who patronize their publication.

Profits of the MINING CONGRESS JOURNAL go to further the work the Mining Congress is doing. They help us in our continual campaign for laws more favorable to the mining industry. They help us watch for and expose results from proposed legislation which would injure mining.

The Mining Congress is doing a big constructive work. Its activities could be increased remarkably if all mine operators would bear their part of the expense. As it is, however, there is no grumbling on the part of those who are paying for the advantages which go alike to those who do not contribute. Little by little we expect to show all the mine operators of the country the need for their support to the work being done by the Mining Congress.

FOCUSES ATTENTION ON AMERICAN WASTEFULNESS

Financial America calls attention to the demand for high explosives which has drawn sharply to the foreground the waste that has been allowed to exist and seems to be still fostered in our whole coal tar industry. The editorial calls attention to great economic questions in the following language:

Germany has for years controlled, and still does control, the market for chemical dyestuffs. This control she exercises simply because she has the foresight properly to organize her industries and to eliminate all possible

waste. For this we yearly pay her a handsome profit, and now we feel the loss severely. With the prospect of several years of war ahead and this supply effectively shut out of our market, it is necessary for us to look to ourselves for relief. We have the basic materials in abundance if we will but turn them to the best account. We can make our own dyes, whether alizarin or aniline. The natural basic dye stuffs we can buy from our Latin American neighbors, but as these are mostly fugitive colors their use is only a temporary stop gap at best.

It may be of interest to note that several months ago, shortly after it became evident that the need of many chemical substances, which have been supplied by German importation, would likely cause a shortage of production in many lines of industry, Secretary Lane of the Interior Department, called together in conference a number of the leading American manufacturers of chemicals. No complete report of this conference ever was published, but random reports were to the effect that the temporary demand for these articles did not justify the necessary investment. It was reported to be the unanimous opinion of the manufacturers who were present that the temporary demand was likely to be terminated by the cessation of the European War, and that without a guarantee of tariff protection, capital could not be found to embark in such enterprises.

Financial America also calls attention to the fact that we are deliberately throwing away at home articles that we are forced to buy abroad, and specifies one of the reasons in the following language:

The extravagance in methods of living is no doubt somewhat to blame for this. The forced economies which the war brought about seem to be overcoming this, but the recent insistent demand of labor for shorter hours and higher wages are again putting us on the high road to wastefulness. It is the part of business men to see that this movement is checked in its infancy, for while it may be true that abnormal profits are accruing to certain lines of manufacture it must be remembered that abnormal conditions prevail in those lines.

If labor succeeds in attaining its ends now, when peace comes, we shall not be in a position to meet the competition which will be thrust upon us and consequently the industries we seek to create and foster will die aborning.

This latter question reaches into every line of production which comes into

competition with foreign products. It is evident that in every line of production the cost of laying down the article at the door of the consumer must not be in excess of the cost of a similar article of foreign manufacture. The question of wages and hours cannot be determined on one basis for the manufacture of articles which have foreign competition to meet and upon another basis in other lines of effort. It would be foolish to expect labor to render its service for less in a competitive industry than in some other industry in which no foreign competition prevails.

If therefore, we expect to meet this competition by decreasing wages or by shortening hours we shall need to revolutionize the whole industrial fabric of the country.

trative ability. Many a theoretically ideal bureau chief has failed completely from lack of this quality. Mr. Manning has grown up in the Government service. His administrative ability contributed not a little to the success of the late Dr. Joseph A. Holmes.

Mr. Manning was the choice of many members of the Mining Congress. In their personal capacities they urged Mr. Lane to recommend him. The Mining Congress as an organization refrains from backing any candidacy.

None is in a position to judge better the manner of man selected than is the Mining Congress. We unhesitatingly predict that Mr. Manning will conduct the Bureau in a manner that will maintain the lofty prestige it already has attained.

MR. MANNING WELL FITTED FOR THE DIRECTORSHIP

A very wise selection has been made by the President for the directorship of the Bureau of Mines. Mr. Manning was appointed to this important post on the recommendation of the Secretary of the Interior. Mr. Lane did not act precipitously. He waited until indorsements for various candidates had been received. After sizing up the abilities of each man suggested he decided Mr. Manning is best fitted to fill the place.

Some suggested that a mining engineer of note should be named. The names of several were mentioned. Some of these would not consider accepting a post paying no more than \$6,000 annually. Those who might have listened to the offer were not so well equipped for the place as is Mr. Manning.

Mr. Manning is not a mining engineer. His technical training has been confined to his twenty-five years' service with the Geological Survey and his five years in the Bureau of Mines. There is no question that this fits him for this particular post. Probably it has been better training than the same number of years spent in the practice of mining engineering. It must be taken into consideration that the direction of a big Government bureau calls for a special class of adminis-

BIG FIELD OFFERED FOR COOPERATION

The American Mining Congress again appeals to the mining men of the United States and those who are directly interested in the development of mining to join in a more comprehensive effort looking to bettering the conditions of the mining industry. There is still need for increased effort looking to the greater safety of the men engaged in mining operations. There is a growing need for increased effort looking to greater efficiency. The need for a better conservation of our mineral resources, and particularly our fuel resources, will grow more intense as time goes on. The crucial need is a better spirit of cooperation between labor and capital.

The coal mines of the United States represent an investment approaching one and one-half billion dollars and more than 700,000 men are directly employed in this branch of the industry, their wages representing practically 75 per cent of the cost of coal production. This productive force has been frequently interrupted in its operations by disputes concerning wages and living conditions in which both capital and labor suffered, to say nothing of the inconvenience and burden of expense which has been suffered by the public who are only indi-

rectly interested in the mining industry.

No reasonably correct estimate has ever been made of the amount of money invested in metalliferous mining operations. It is fair to assume that the amount would total more than a billion dollars, employing more than 300,000 men. The idleness of this capital and these men for extended periods places a burden upon the cost of production, which destroys efficiency and largely increases costs of production.

The problems thus presented are grave and important, threatening our Government upon the one hand and adding immensely to the difficulties of business enterprises. The American Mining Congress presents an open forum for the discussion of every subject related to mining and it places no restriction upon membership other than that of good character and an interest in the mining business.

We urge all who are interested in bettering mining conditions to join hands with the faithful men who have carried on the work of the Mining Congress. The problems are too large for solution by a few and must have the support and assistance of the great majority of those who are interested to accomplish the best results.

GOVERNMENT'S MINING EXPERTS MEN OF MERIT

As the work devolving upon the Bureau of Mines and the Geological Survey requires the frequent presence of members of their staffs in mining regions, mine operators are acquainted with the type of man in the Government service. Consequently, there may be nothing particularly illuminating in the following tribute which we wish to pay to these efficient public servants.

Daily contact with the men who are striving to make the work of the miner more certain to result successfully, convinces us that few bodies of men are more efficient or so willing to subordinate themselves in the interest of composite achievement. The work the Government is doing toward advancing the mining industry runs quickly to a plane of technical complexity. Even the

elementary positions in this work require long and expensive preparation. Graduates of technical schools start in the service at very low salaries. Promotions are slow and many times are dependent on the whim of an unsympathetic appropriation committee in Congress.

After entering the service the young man with his high-priced education is assigned to routine duties. There will be few occasions on which he will have an opportunity to display his ability to the public.

Mines are isolated. Geological work is not done on the stage of a theater. Few see or hear of the scientist as he delves into the secrets of rocks and strata in a remote corner of the country. When he returns to Washington, reports must be written covering the months of field work. Thus the winter passes. The four narrowly separated walls of a stuffy office limit the activity of the Government's experts while they are in the capital. Opportunities are few for being in the path of even a passing sweep of the spotlight.

Much of the information gathered in the field simply fills a few spaces in a table of figures. Now and then the name of the writer will appear on a report. The matter discussed is certain to be prosaic and of interest only to a limited number. Reports are more likely to draw criticism than praise.

When grey begins to streak the hair of the average scientist in Government service he usually looks back on years of hard and meritorious work but realizes that he hardly is known outside of his own bureau.

Few vocations call for as much hard work and give so few opportunities of personal reward.

It is an exceptional body of men that has been assembled to serve the mining industry. Its work deserves more general recognition.

A word as to the directorship of two bureaus working principally for the advancement of the mining industry should be said. From the time of Benjamin Franklin, American statesmen have feared a salaried bureaucracy. Throughout the life of the republic many have advocated the payment of no salary to

the heads of bureaus. Patriotic citizens could be found who would perform these duties without salary, it is held. While these directorships have not been placed on exactly an honorary basis the remuneration has been kept at such a low figure as to make the salary no inducement for seeking the place.

It is acknowledged by those closely in touch with the situation that a man who can direct successfully either the Geological Survey or the Bureau of Mines can secure twice the salary in private work.

Dr. Holmes, the late director of the Bureau of Mines, it will be recalled, refused a \$20,000 position offered by the United States Steel Corporation. Dr. Smith, the incumbent of the directorship of the Geological Survey, is known to have received numerous offers carrying much higher salaries than he is receiving from the Government.

So it is seen that even the highest places in this service call for self-denial and a curb for personal ambitions.

On the whole the men who look after the Government's mining research are worthy of highest commendation and should be encouraged by active and wholehearted cooperation on the part of every mine operator.

Geologists who are expert specialists in different subjects frequently are sought by the commercial corporations and tempted with salaries very much greater than those paid by the Government. Occasionally a man resigns because he cannot afford, in justice to his family, to continue in the service at the Government rate of compensation.

A rough calculation made some time ago in the Geological Survey showed that the average increase in the salaries of twenty geologists who had left the service was two and two-thirds times the amount being received at the time of resignation. These twenty men left the service within two years' time.

PENNSYLVANIA IN DIRE NEED OF NEW TAX LAWS

Special attention is called to an article in this issue of the JOURNAL, by William

Griffith, a prominent Pennsylvania mining engineer and geologist.

Mr. Griffith sets forth concisely the unfair methods used in making assessment of mineral land in his State. The article is well worth reading.

We hope sincerely that it will not be long before the people of Pennsylvania demand that the legislature enact some remedial laws to ameliorate this condition.

INSTRUCTIONS UNHEEDED;

TOLL IN LIVES A RESULT

Every few days comes word of men being killed in mine explosions. The other week, nine men lost their lives in this manner in a coal mine at Johnstown, Pa. The State inspector and his deputies, after making an investigation, declared that a shot had liberated a small quantity of gas which was ignited by the workmen's lamps; that the same shot by its concussion had raised the coal dust and that the lighted gas had set fire to the coal dust, causing an explosion.

The inspectors recommended that permissible explosives be used in the mine; that noncombustible material be used exclusively in tamping; that the mine be kept as free as possible from coal dust; that the coal dust be kept watered, loaded and sent from the mine; and that locked safety lamps be used exclusively throughout the mine. All of these recommendations have been issued repeatedly by the United States Bureau of Mines.

It is a pity that men responsible for the operations of coal mines cannot grasp the full significance of such recommendations until there has been a disaster costing the loss of many human lives.

It is a pity that it is necessary AFTER an explosion to make recommendations that apply to coal mines generally before an explosion.

WASHINGTON OFFICE ALWAYS AT SERVICE OF MEMBERS

We are glad to have been of service to several members of the Mining Congress during the last month. We realize that the Washington office is in a position to be of help to members and we shall be only too glad to aid in any way possible.

In this connection we may mention that most reports made to the land office by surveyors and other agents are confidential. We cannot furnish copies of these reports or even ascertain their general drift. Other information regarding land matters are public.

When requests for service from members involves extensive copying it will be necessary to make a charge for the actual cost of this work.

CONVENTION HEADQUARTERS

The Palace Hotel, San Francisco, has been selected as the official headquarters of the American Mining Congress, during the convention, September 20-22. Delegates and members desiring reservation will do well to communicate either with the Palace Hotel, or with Secretary Callbreath at the earliest time possible. A considerable number of rooms have been reserved, the charge for same to be as follows: \$6 for double rooms occupied by two people; \$4 for single rooms occupied by one person.

MINING SHOW IN 1916

Officers of the Mining Congress have under consideration the advisability of staging a "Mining Show" in connection with the 1916 convention.

The general purpose of those now having this matter in mind is to demonstrate, through practical illustrations, the various items in the cost of mining transportation and exchange of coal, in order that the public shall be able to understand better the actual conditions of coal mining, the great advantage to be derived through safety, efficiency and conservation and the necessity of general cooperation to accomplish results.

It is suggested that the holding of such an exposition in one of the larger Eastern cities, would justify the Western states in illustrating the problems of metalliferous mining, upon such a scale as would be of general interest to the public, and advantage to those who shall sustain the expense.

This subject will be considered at the San Francisco convention and definite conclusion reached as to the advisability of such a course.

Mining in Idaho Looks Up

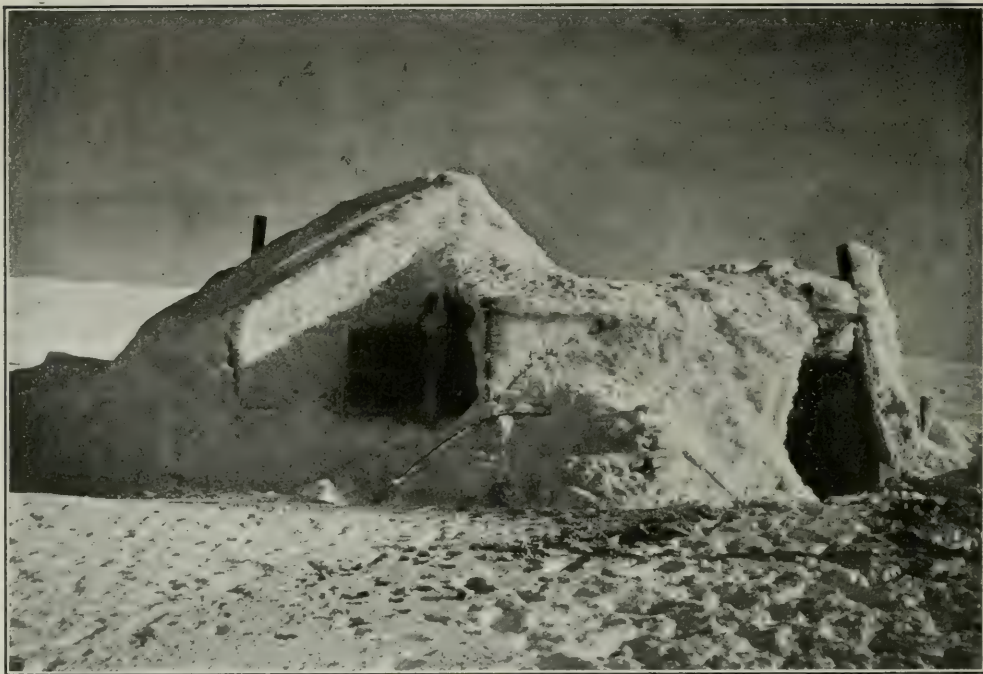
The rise in lead prices is expected to spur many of the Idaho companies to increased production. A large increase in zinc production will certainly be made, as the main producer, the Success, Morning, and Interstate Callahan, have smelting contracts and are making every effort to meet an increased demand, government experts say. The copper situation in Custer and Shoshone Counties has been stimulated by the better price.

VARIETY OF QUESTIONS HURLED
AT SURVEY MEN AT THE FAIR

Some of the trials and tribulations of the men in charge of the exhibit of the Geological Survey at the Panama-Pacific Exposition, are outlined in a recent letter. Among one day's grist are the following:

One man wanted to be given a list of localities where there are mine dumps, tailing piles, or impounded slimes that contain \$1 or more per ton in gold, lost through crude methods of treatment. A woman brought a handful of ore to ask if the mine is any good. Here are some of the questions asked: Where can I get a large map of the United States? What do you know about agricultural possibilities in Susitna Valley, Alaska, and has the Survey a report on that region? Can you show me some willemite and does it occur anywhere outside of New Jersey? Is so and so going to operate his dredge on Seward Peninsula this year? Have you a copy of the Santa Fe guide book published recently by the Survey? Where will the Government railroad in Alaska get its lumber? How does the public get press notice of new Survey publications? What is radium really good for, and is it true that Germany has \$250,000 worth on exhibit here? How long does it take to go to Dawson, Yukon Territory? Can you show me some tin ore and where is it produced in this country? Is the Matanuska coal field better than Bering River? Does Cook Inlet freeze in winter? Will they ship coal from Knick Arm or take it to Seward? Why did the Survey publish on the Skinimo quadrangle instead of, or before, Bright Angel? Are Alaska mining laws the same as the United States? Where can I find out about some mining claims in Nevada? Where does the Ocean Shore R. R. go? Where is there good hunting in Alaska? A little old lady whose boy "works on a survey" somewhere in Arizona asks, "Don't you know him? He works for the Government." The Boston broker who wants to be directed to a reliable mining engineer; the saloon keeper from Juneau with a gold nugget like a hen's egg; the Oregon rancher who wants to know if there is oil in his State; the school teacher who wants to see some radium—all are given the best information available.

"TO MISS THIS YEAR'S CONVENTION OF THE AMERICAN MINING CONGRESS WILL BE ALMOST A CALAMITY TO ANY MINE OPERATOR."



LOVELL'S CABIN, ON ONE OF THE NORTHERNMOST TIN PROPERTIES IN THE WORLD. IT IS ON CAPE MOUNTAIN, ALASKA. THIS PHOTOGRAPH WAS TAKEN IN THE MIDDLE OF WINTER.

McCASKEY INSPECTS WESTERN GEOLOGICAL SURVEY OFFICES

H. D. McCaskey, head of the Mineral Resources Division of the Geological Survey, left August 20 on his annual administrative inspection trip of the mineral resources offices of the Geological Survey at San Francisco, Salt Lake City, and Denver. He will be gone a month.

These offices were established principally to contribute to the mineral resources report of the Survey. They are in charge of the following statisticians: Chas. G. Yale, 305 Customs Building, San Francisco; Victor C. Heikes, 312 Postoffice Building, Salt Lake City, and Chas. W. Henderson, 311 Chamber of Commerce Building, Denver, Colo.

These statisticians also are the authors of the annual mine reports on gold, silver, copper, lead, and zinc, covering the entire Western States.

The offices of the Survey are very useful bureaus of information in the West and the men in charge have done very good work, not only in distributing Survey publications and explaining the Survey work but more so in giving general assistance to the public, for which they are specially fitted by reason of training in Survey work.

The territory covered by Mr. Yale is California and Oregon; that covered by Mr. Heikes includes Utah, Arizona, Montana, Nevada, Washington, and Idaho. Mr. Hen-

derson has Colorado, South Dakota, Wyoming, Nevada, Mexico and Texas.

Incidentally to their own work, the men in charge of these branch offices gather a great deal of useful information for the Washington office. These offices also act in a way as field headquarters for the surveyors, geologists, and topographers. In other words, the three offices form a line of outposts of the Washington office which cover the most important metal mining territory between the Mississippi and the Pacific.

AUTO TOURISTS FIND SURVEY'S MAPS ACCURATE

A number of motorists have expressed appreciation of the maps of the Geological Survey. A retired admiral, after an extended motor trip states in a letter to the Survey: "I piloted the party through without making a wrong turn. The automobile books are 'not in it' with the Survey's maps."

DEVELOPMENT OF PHOSPHATE FIELD IN KENTUCKY IS PROGRESSING

An investigation of phosphate in the central Kentucky field has been completed by W. C. Phalen. This field is small but is assuming considerably more importance since the entrance of the Charleston Mining and Manufacturing Co., which is operating extensively in the region.

TRAFFIC DEVELOPMENTS OF THE MONTH

Anthracite Coal Case

Pursuant to an order of June 10, 1912, a general investigation was made of the rates, practices, rules, and regulations governing the transportation of anthracite coal from the Wyoming, Lehigh, and Schuylkill regions in the state of Pennsylvania to tidewater ports and interior points on the lines of the initial anthracite carriers. In this case the Interstate Commerce Commission holds:

1. That the rates on anthracite coal, prepared and pea and smaller sizes, in carloads, applicable from producing districts in the Wyoming, Lehigh, and Schuylkill regions in the state of Pennsylvania to tidewater ports and certain eastern interior points are unreasonable, and the rates on anthracite coal, prepared and pea sizes, from these districts to other interior points are unreasonable, and reasonable rates fixed for the future.

2. That the respondents by means of trackage arrangements and the free transportation to junction points in the mining regions of coal exchanged by their allied coal companies, have extended the advantages of interline transportation to their coal companies to the prejudice of other coal shippers to whom interline transportation at joint rates has been denied. Respondents required to establish through routes and publish joint through rates applicable thereto.

3. That anthracite coal is a low-grade commodity which is transported in vast quantities in trains of maximum tonnage. The tonnage loaded in each car is much greater than the loading of most other classes of traffic. Most of the anthracite tonnage is shipped from collieries whose daily production, measured in carloads, is very large. These conditions tend toward lower operating costs.

4. That concessions and offsets granted by respondents to their allied coal companies in the form of interest charges, royalty earnings, the use of valuable property at inadequate rentals, the free use of the carriers' funds and credit, or by other means are as pernicious as direct cash rebates. Such concessions and offsets are unlawful.

5. That lateral allowances paid to a coal shipper in accordance with an agreement, alleged to be additional compensation for the use of a facility furnished by the shipper, are unlawful rebates.

MCCHORD WRITES OPINION

Chairman McChord wrote the opinion. In part he said:

Pursuant to an order of June 10, 1912, a general investigation was made of the rates, practices, rules, and regulations governing the transportation of anthracite coal from the Wyoming, Lehigh and Schuylkill regions in the state of Pennsylvania to tidewater ports and

interior points on the lines of the initial anthracite carriers; and whether such coal is mined or produced by or under the authority or control of common carriers engaged in the transportation thereof, or whether said common carriers are directly or indirectly interested in the production or sale of the anthracite coal which they transport.

These rates, practices, rules, and regulations have been, since the year 1890, the subject of several formal complaints to this Commission and many informal complaints by shippers of anthracite coal. The Commission's order under date of June 10, 1912, named all carriers in official classification territory, but it was found impracticable to extend the present inquiry beyond the financial affairs and operations of the eleven initial anthracite carriers.

Freight rates on many commodities are but an infinitesimal part of the price which the consumer pays for such commodities. On coal the freight rate is a more important factor. Anthracite coal is very largely a fuel for domestic use, and it is a necessity. That reasonable freight rates should be charged for the distribution of the great fuel tonnage herein involved is of vital importance to the producers and of equal concern to the consumers.

THE INITIAL CARRIERS

The initial anthracite carriers, respondents in this case, are:

The Central Railroad Company of New Jersey.
Philadelphia & Reading Railway Company.
The Delaware, Lackawanna & Western Railroad Company.
Lehigh Valley Railroad Company.
Erie Railroad Company.
Wilkes-Barre & Eastern Railroad Company—New York, Susquehanna & Western Railroad Company.
New York, Ontario & Western Railway Company.
The Pennsylvania Railroad Company.
The Northern Central Railway Company.
The Delaware & Hudson Company.

Excepting the Delaware & Hudson Company and the Northern Central Railway, the railway lines of all these carriers extend to tidewater. The railway lines of the Delaware, Lackawanna & Western Railroad, Lehigh Valley Railroad, Erie Railroad, New York, Ontario & Western Railway, Pennsylvania Railroad, and Northern Central Railway extend to Lake Ontario and Lake Erie ports.

Many of the facts and figures gathered during the investigation have been omitted from this part of the report, but in order that they may not be lost sight of they are included in the appendix, which is made a part of this report.

The railway lines of most of the initial anthracite carriers were constructed into the mining regions long prior to 1890. The Scranton branch of the New York, Ontario & Western was extended into the mining region and completed in July, 1890. The consolidation and construction of a number of the railway lines

making up the New York, Susquehanna & Western Railroad occurred during the eighties; its western connection, the Wilkes-Barre & Eastern Railroad, which extends westward from Stroudsburg, Pa., into the mining district (Wyoming region), was completed in 1893.

Anthracite coal is mined in three regions in the state of Pennsylvania—the Wyoming, the Lehigh, and the Schuylkill. Practically the entire source of supply is confined to an area of 496 square miles, having an extreme distance from northeast to southwest of about 100 miles. The tonnage (in tons of 2,240 pounds) of anthracite coal shipped from the three regions was 3,358,899 in the year 1850, 16,182,191 in 1870, 36,615,459 in 1890, 45,107,484 in 1900, and 71,295,716 tons in 1913. The tonnage shipped has practically doubled since the year 1890. This large tonnage is produced from approximately 302 operations, collieries, and washeries in the three regions.

SURVEY REPORT QUOTED

As stated in publications issued in 1911 by the United States Geological Survey—

the increase in the production of anthracite bears an approximate relation to the increase in population. This has been particularly marked during the last two decades, or since the use of anthracite for iron making has practically disappeared.

This increase of consumption is limited, however, by the increasing use of gas as fuel and of central steam-heating plants which burn bituminous coal.

The breakers at the collieries reduce the masses of coal from the mines into the various sizes used for domestic and commercial purposes. Washery operations have in recent years recovered from the culm banks and turned into the channels of trade large quantities (approximately 2,500,000 tons annually) of the smaller sizes of anthracite coal. The first washery was installed in the year 1890. Anthracite coal is sold in the market in eight sizes, the size being determined by the dimensions of the meshes of screens through and over which the coal is passed.

The sizes smaller than pea are a by-product in the preparation of domestic sizes. The sizes larger than pea are designated "prepared sizes" in the carriers' freight tariffs.

The stove and chestnut sizes are in the greatest demand and constitute 40 per cent. of the total shipments. They are essentially sizes for domestic use. Egg size is used largely in the furnaces of residences, as is also the pea size, and the latter also is used extensively in kitchen ranges. The smaller sizes come directly into competition with bituminous coal and are used largely in eastern cities in hotels, apartment houses, and office buildings. The sizes larger than pea size constitute approximately 61 per cent. of the total tonnage shipped.

It is apparent that anthracite coal is principally a domestic fuel. Its selling price at tidewater (the wholesale price obtained by the operators) shows a very definite upward trend during recent years, 34 to 49 per cent. during the past thirteen years.

Anthracite coal is consumed in a very broad market, geographically speaking.

Since this fuel is produced by separating the mine output into eight standard sizes, all these sizes must be produced at the same time. In certain months of each year, however, the consumption of domestic sizes is greater than in other months, and the market demands for the steam sizes in some months exceed and in other months are less than the normal production. Therefore, if the collieries operate continuously, some of their product must be stored. In past years, to meet this situation, anthracite was quite extensively stored in the carriers' cars for long periods, for which no demurrage charges were assessed, and some of the carriers constructed large and costly storage plants. These plants were equipped with conveyers, engines, electric machinery, and with structures to cover the coal, and the cost ranged from \$23,000 to \$600,000 each. The carriers also constructed a large number of retail delivery trestles at various points on their lines of railway. A large number of the storage plants and trestles are, under leases from the carriers, devoted exclusively to the business of the coal companies controlled by the carriers.

These carriers are to a large extent interested in the mining and sale of anthracite coal through their affiliations with or their control of separately incorporated coal companies. Two of the carriers, the Delaware, Lackawanna & Western Railroad and the Delaware & Hudson Company, own coal lands and conduct mining operations.

THE LARGE COAL COMPANIES

The Lehigh Coal & Navigation Company owns a large portion of the railway lines operated by the Central Railroad Company of New Jersey. Under leases and agreements entered into during the years 1871 to 1883, to remain in effect for 900 years, the Central Railroad of New Jersey operates the railroads so leased, and the navigation company is obliged to ship 75 per cent. of its output over the leased railway lines. The navigation company is not controlled by the Central Railroad Company of New Jersey.

The Delaware, Lackawanna & Western Coal Company was organized in 1909. Under an agreement in writing entered into at that time it ships and markets all of the coal mined by the Delaware, Lackawanna & Western Railroad Company. At the time the coal company was organized the Lackawanna Railroad paid an extra dividend of \$13,000,000 to its stockholders, and its stockholders were accorded the privilege of purchasing the \$6,500,000 stock of the Delaware, Lackawanna & Western Coal Company. Most of them availed themselves of that privilege.

The Lehigh Valley Coal Sales Company was organized in 1912 and commenced business on March 1, 1912, and under an agreement in writing it ships and markets all of the coal mined and purchased by the Lehigh Valley Coal Company. The coal sales company issued \$6,060,800 in stocks, giving the shareholders of the Lehigh Valley Railroad Company the privilege of purchasing the stock. At the same

time the Lehigh Valley Railroad Company paid an extra dividend of \$6,060,800 to its shareholders to provide them with the funds to purchase the stock of the coal sales company.

The Reading Company, a holding company, owns the entire capital stock of the Philadelphia & Reading Railway Company and the Philadelphia & Reading Coal & Iron Company.

With these exceptions, the stocks of the coal companies that ship the largest portion of the total tonnage of anthracite coal shipped over the railway lines of the several initial carriers are owned by the carriers.

RATES ON ANTHRACITE COAL

Generally speaking, all the collieries on the lines of any one of the initial carriers in each region are, under the schedules of rates established by the carriers, covered by blanket rates to a particular destination; that is, the several collieries in each region are placed in one group taking the same rate, although the distance between the collieries in the group may be 50 miles more or less. To many important groups of destinations also the rates via any given line are frequently the same; that is, they are blanketed from all the regions reached by that line. Exceptions to this rule apply principally to local short-haul rates.

Joint rates are in effect via all lines to Chicago, Peoria, Joliet, and East St. Louis, the gateways to points west of official classification territory. The proportion of such joint rates that accrues to the lines east of Buffalo is \$1.75 per ton (2,240 pounds) on all sizes, such proportion being 25 cents per ton lower than the carrier's local rates on prepared sizes to Buffalo. To other points in central freight association territory the rates generally are based on combination of the local rates to and beyond Buffalo; but the Erie publishes rates to points on the line which it operates, extending westward to Marion and Dayton, Ohio, and the Pennsylvania publishes rates to points on its own line and to points on its affiliated lines extending to Chicago and St. Louis. The rates of the Erie and Lehigh Valley to Buffalo on anthracite coal destined for reshipment over Lake Erie are 25 cents per ton higher than their local rates to Buffalo. Joint rates have been established to Montreal, Ottawa, and a few other Canadian points; to other Canadian points the rates are combinations of the rates to and beyond the lake ports.

Through rates to New England points are made via New York City, the Poughkeepsie bridge, and the Albany gateways, and are influenced to a large extent by the rates to tidewater for reshipment, plus the rates beyond the tidewater ports by rail or by water to points in New England.

RATES TO TIDEWATER

For many years a large number of the independent operators sold their anthracite coal production at the mines to the carriers, or to their allied coal companies, in accordance with the terms of "percentage contracts." Instead of a fixed money price per ton, it was provided in

the contracts that the independent operator who so sold and delivered his coal f. o. b. cars at the mines should receive a certain per cent. of the average price at which that grade of coal was sold in the tidewater market of New York harbor. These contracts have been considered at length in the decision of the Supreme Court in the *Reading Company* and *Temple Iron Company* cases, 226 U. S., 324.

The percentage of the tidewater selling price paid to the operators on prepared sizes of coal was, in the early years, about 40 per cent. It gradually increased in later years, reaching 50 and 55 per cent. in the eighties, 60 per cent. in 1892, and 65 per cent. on November 1, 1900. The contracts were commonly designated as 60 per cent. contracts, 65 per cent. contracts, etc. The remaining portion of the selling price of the coal, 40 or 35 per cent. in the more recent years, was the freight rate which the carriers charged the individual operators who elected to ship their own coal production to tidewater. The percentage freight rate was also applied on anthracite coal shipped to Buffalo in the early days. In 1882 the Reading Railroad's rate on anthracite coal to Buffalo was 57 per cent. of the selling price at Buffalo.

In July, 1901, several of the carriers took action to establish fixed or flat rates to tidewater. There is here presented a condition wherein carriers who were also dealers, not in their capacity as carriers but as dealers in the commodity, through the agency of the Temple Iron Company, established rates on anthracite coal for all shippers to tidewater. The Supreme Court in the *Temple Iron Company* case, 226 U. S., 348, recently held that the Temple Iron Company, to whom these carriers in the manner described delegated the power to fix rates, was an agency used by several of these carriers for the unlawful purposes of gaining a monopoly of sale of anthracite coal in the markets.

ESTABLISH MONOPOLY

It has been the policy for many years of these carriers to gain a monopoly of the production and sale of anthracite coal. Those whose property they coveted were at their mercy, as they must either pay the toll in freight rates which these carriers chose to exact or accept the price for their product which the carriers or their coal companies elected to pay.

The carriers for many years were allowed a free hand in the institution of freight rates. It is evident that they used that great power not with the view of establishing reasonable freight rates, but with the intent to establish rates on this commodity that were high enough to remove the production of the independent operators from the field of competition with the coal mined by the railroad interests.

IMPORTANCE EMPHASIZED

The importance of this case can not easily be overstated. The record is so extensive as to forbid a review in detail of the character of much of the evidence introduced. After a careful review of the record we are impressed with the inherent unlawfulness of the rates and

practices established by these carriers, which clearly are the outgrowth of past conditions wherein the carriers were producers, shippers, transporters, and vendors of the commodity. If the rates they established for transportation were excessive, it resulted in no hardship to their mining and selling operations because the excessive profits from the transportation services offset the absence of profits in their mining and selling operations, and high rates eliminated the competing shipper from the markets.

If the record in this case were barren of evidence as to income, revenues, and low operating costs resulting from the transportation of this commodity, the mandatory language of the act to regulate commerce would require removal of the unlawful discriminations, preferences, and advantages which have for many years been extended by these carriers to their allied and controlled coal companies and which operate to the prejudice of the individual shippers of this commodity. The conduct of these carriers, extending over a long period of years, in granting to their allied coal companies concessions from, and offsets against, their established tariff rates, presents very strong evidence that the rates on anthracite coal, which these carriers established, are excessive. Their coal companies ship 80 per cent. of the total production, and if a substantial reduction is made in the tariff rates its full effect will fall upon but 20 per cent. of the tonnage shipped. If the great purpose of the act to regulate commerce is to be carried out, we must require that such tariff rates on this commodity shall be established as can be maintained on the shipments of all shippers.

The operations of several of these carriers have for many years produced a very large income for their stockholders. Having these results before us in the *Five Per Cent. case*, 31 I. C. C., 384, we held:

The financial condition of the various railroads composing the thirty-five systems varies greatly, as disclosed by their net corporate income as well as by their operating income. The condition of some of them is so prosperous that they clearly do not need a higher net income; the condition of others is such as to preclude the expectation of a return upon outstanding capital stock or the possibility of raising much additional capital without a thorough reorganization.

Several of the respondent carriers have granted the exclusive use of some of their piers, docks, storage plants, retail delivery trestles, and other properties to their allied coal companies at inadequate rental charges and under conditions which constitute substantial discrimination in favor of such coal shippers. The exclusive right to operate certain of the carriers' public docks and piers has also been granted to such coal companies who in operating such properties gain information as to the shipments of their competitors, handled over the docks and piers, which section 15 of the Act to regulate commerce prohibits common carriers from giving to shippers and prohibits shippers from receiving from common carriers. It has often been held that it is the object of the Interstate Commerce Act and the Elkins Act to prevent favoritism by any means or device whatsoever and to place all shippers upon equal terms. We assume the

carriers will at once adjust these practices to remove the discrimination and conform with the requirements of the law.

The evidence shows that several of these carriers have in the past declined to establish joint rates for all shippers, while the coal production of their allied coal companies has been accorded an interline movement by means of trackage arrangements and the free transportation to junction points of the coal production exchanged by the coal companies controlled by the carriers. Such a practice is unlawful and is discriminatory in its worst sense, since the discrimination results to the benefit of the carriers. The carriers will be required to establish through routes and to publish joint rates, of which other shippers may avail, such as will neutralize any such undue benefit heretofore enjoyed by the coal operations of railroad ownership.

COMMISSIONER HARLAN DISSENTS

Commissioner Harlan, dissenting, said:

In June, 1911, upon a voluminous record in *Meeker & Co. v. L. V. R. R. Co.*, 21 I. C. C., 129, affirmed in 236 U. S., 412, we condemned the rates on anthracite coal from the Wyoming coal fields of Pennsylvania to tidewater and fixed reasonable rates for the future. Under ordinary circumstances and in the absence of any showing of changed conditions there would be no objection to the acceptance at this time of that basis as a general standard for fixing rates to tidewater, and also as a foundation upon which to construct rates to interior points. But three years later in *The Five Per Cent. case*, 31 I. C. C., 351, and upon an exhaustive showing of their financial condition by all the carriers operating in official classification territory, we found, because of the growing increase in operating costs, interest values, and for other reasons, that the carriers in that territory were in need of additional revenues. Upon that finding and in a subsequent supplemental report in the same proceedings, 32 I. C. C., 325, we authorized in that territory an increase by 5 per cent. in the general level of rates on practically all traffic. The rates on anthracite coal were excepted, as expressly stated in the report, because those rates were under consideration on the record before us here. In dissenting to the supplemental report (id., p. 332), I explained that I was unable to accept the principle that a horizontal increase in rates was lawful without some further test as to the reasonableness of the rates so constructed; and I expressed the view that by following the suggestions of the original report the carriers could procure the required revenue and at the same time would put their general rate structure on a sounder and more satisfactory basis and eliminate from it the inconsistencies and discriminations then admitted to exist, many of which, as illustrated by the record before us in this case, have not since been removed. Nevertheless, the Commission having authorized a general horizontal increase of 5 per cent. with respect to practically all other traffic, it seems to me inconsistent, if not discriminatory, now to take

the level of rates, prescribed three years previously in *Meeker & Co. v. L. V. R. R. Co.*, *supra*, as a basis for rates in the future on anthracite coal without taking into consideration the advances allowed in the general rate structure throughout this territory in *The Five Per Cent. case*. In view of the course ultimately taken in that proceeding no commodity should be relieved from bearing its proportion of the increased revenues found to be required.

In my judgment the record before us here justifies a modification of many of the present rates, but for the future a rate structure on anthracite coal based upon the general standard of the *Meeker case*, surcharged, so far as that would result in a reasonable rate schedule, with the 5 per cent. increase that has been imposed in *The Five Per Cent. case* upon substantially all other traffic in official classification territory would seem to be a more consistent disposition of the case.

PROMISES DRASTIC MOVE

Commission Threatens to Take Criminal Action Against Carriers

In the matter of rates, divisions, rules, regulations, and practices governing the transportation of railroad fuel and other coal the Commission's finding is summarized as follows: The character of a shipment and not formal incidents, such as billing, determines the rate and divisions applicable. The rates and divisions to points of actual destination must be applied to railway fuel coal shipments here involved, and the application of rates and divisions to fictitious billed destinations is unlawful and can not be justified by the theory that such rates and divisions would be proper rates and divisions to the average point of actual destination.

A railroad company as shipper is entitled to the same consideration as any commercial shipper and no more, even when the shipment moves in part over the rails of such railroad company. It follows that in such case the carrier is entitled to a division of the joint through rate. But the division must be fixed by the same considerations which would determine divisions upon a through commercial shipment in which the railroad had no interest other than that of carrier. The divisions now received out of the joint rate on supply coal by the Seaboard Air Line, the Atlantic Coast Line, and the Charleston & Western Carolina Railway Company for the hauls from their junctions are special and abnormal divisions.

The Commission may fix divisions when a railroad company is the shipper or is owned by the shipper so that the division of a through rate might be the means of indirectly reducing transportation charges or effecting discriminations. Divisions here involved will not be fixed by order at this time, but carriers will be expected to adjust them to meet views herein expressed.

The Commission may order that such divisions be filed with it and it is so ordered as to the divisions applicable to fuel coal shipments herein involved.

The question of the proper method of handling fuel-coal rates and divisions is an old one and the Commission is impressed with the fact that some of the carriers have not endeavored to meet the views heretofore announced. We shall therefore look with great care to the steps taken by the carriers to meet the views herein set forth, and the next time we have to deal with a situation like that here presented we will do so under the criminal provisions of the act.

INCREASE WESTERN RATES

Recent Decision Allows Increases in Coal and Coke Rates

Much interest is shown in the Western Rate case in which a decision was handed down recently. Coal and coke are the only mineral products affected. The Commission said with reference to these products:

"From the facts of record we are of opinion and find that, with the exception of rates on coal to points in South Dakota, the proposed increased rates on coal have been justified, and the orders of suspension relating thereto will be vacated."

The increase of rates affects bituminous coal from mines in Indiana, Illinois, Kentucky, Alabama, Missouri, Arkansas, Oklahoma, Kansas, Colorado, New Mexico, and Iowa, and from the docks on Lake Michigan and Superior when shipped to points in western trunk line and southwestern tariff committee territories. Some reductions are made. The increases are either 5 or 10 cents per ton. The increased revenue is 5.36 per cent. of the former revenue on bituminous coal.

MUST PAY DEMURRAGE

Plymouth Coal Company Loses Case Brought Against Lackawanna

In the case of the Plymouth Coal Co. v. Delaware, Lackawanna & Western R. R. Co. the Interstate Commerce Commission held that the defendant's demurrage regulations governing anthracite coal awaiting transshipment at or near tidewater at Hoboken, N. J., is reasonable.

The Plymouth Coal Co., of Wilkes-Barre, Pa., has mines at Plymouth and Luzerne, Pa., in the Wyoming anthracite coal region. It attacks the demurrage regulations governing anthracite coal awaiting transshipment at or near tidewater at Hoboken, N. J. These regulations provide that all cars containing anthracite coal consigned to and held at Hoboken, including Secaucus, N. J., a point some 3 or 4 miles from Hoboken, and there transshipped by water or reconsigned, will be subject to demurrage, computed on the average plan, allowing an average detention of five days per car free of charge, and that demurrage would be charged at the rate of \$1 per car per day for detention in excess of the five days.

The complaint was dismissed.

Mineral Land Decisions

Covered by Old Entry

Instructions just have been issued to the Commissioner of the General Land Office by the Secretary of the Interior as follows:

With regard to patentability of Big Oak Flat No. 1, lode mining claim in the Sacramento Land District of California, which was included in the mineral entry made January 14, 1915, by the Central Land & Trust Company, you are advised that all else being regular the mining claim referred to must be held to be patentable.

The claim was located in 1878. Field investigation discloses that a valid discovery of mineral has been made upon the property and that the requisite amount of improvements have been placed upon it. It appears that at the date of the withdrawal the claim was in all respects valid. The question of present patentability of the claim arises from the fact that the order of withdrawal antedated the filing of the application for patent and the making of proof and payment.

The order of withdrawal applies only to public lands of the United States and hence is inoperative with respect to an area included in a mining location existing at the date of the order.

In view of the purposes and provisions of the act the Secretary of the Interior expresses the opinion, that patent should not be issued on the entry until the grantees under the act shall have been given notice and afforded an opportunity to make such showing as they may desire.

Utah Entry Cancelled

Cancellation of a mineral entry by Earl Douglass at Vernal, Utah, has been sustained by the Secretary of the Interior.

The land in question contains fossil remains of prehistoric animals. The record discloses that such fossil remains have been excavated for uses in scientific investigation.

The Commissioner of the General Land Office held that such a claim is not subject to entry under the mining laws of the United States.

Lindley on mines lays down the following rules for determining the question as to whether the character of the land is mineral or not:

"The mineral character of land is established when it is shown to have upon or within it such a substance as: (a) Is recognized as mineral according to its chemical composition by the standard authorities on the subject. (b) Is classified as a mineral product in trade or commerce. (c) Such a substance (other than the mere surface which may be used for agricultural purposes) as possesses economic value for use in trade, manufacture, the sciences or in the mechanical or ornamental arts."

The material here claimed is not recognized as mineral by standard authorities on the subject, it is held by the Commissioner. It is not classified as a mineral product in trade or commerce nor does it possess economic value. Therefore it is held that the land is not mineral within the meaning of the public land laws.

The decision in the South Dakota Mining Company v. McDonald is said to hold in this case. A paragraph from this decision reads: "Land not shown to contain deposits, in paying quantities, of any of the mineral substances usually developed by mining operations, but which appears to be valuable and to be desired by the parties attempting to secure title thereto chiefly because of a cave or cavern, the entrance to which is situated thereon and for the crystalline deposits and formations of various kinds, such as stalactites, stalagmites and geodes found therein, which are made the subject of sale by the parties, not as minerals but as natural curiosities, is not mineral land within the meaning of the laws."

Based on this decision the Secretary of the Interior holds that the Commissioner is correct in ruling that the land is not mineral within the meaning of the law.

Forest Reserve Mill Site Valid

Cancellation of the mineral entry of James W. Nicol near Waterville, Wash., has been disapproved by the Department of the Interior.

The property in question is known as the Lightning lode and mill site. The Lightning mill site was located November 10, 1913. It is within the Chelan National Forest. It has been continually within this reserve since 1908.

Mineral lands in national forests were made subject to location and entry in 1897, but mill sites are not located or entered as mineral. On the contrary, land entered as a mill site must be shown to be non-mineral in character. As this mill site was located subsequent to the reservation of the land as a part of the national forest the entry is held invalid, so far as concerns the mill site.

The Lightning Lode claim embraced in the same application was located February 5, 1900.

The purpose and intent of the Act of 1897 was to permit the mineral development of the public lands within national forests. The mineral lands were made subject to entry under the existing mining laws of the United States. As an element of the mineral development of these lands it is necessary that the lode locator should be permitted to have the right to locate and purchase a mill site. The right to locate a mill site is one guaranteed by the existing mining laws and is an incident under the facts in

this case dealing with the right to make mineral entry. By necessary implication the law confers the right to locate or purchase a mill site in connection with a lode claim within a national forest. The Department also understands that the practice of the General Land Office previous to the decision here in question has been in harmony with the above view and similar mill sites have been patented. As a result the decision of the Commissioner is reversed and the mineral entry will be passed to patent.

Denies Petition

In the case of Alfred W. Hare and Bert Harris, who protest against the desert land entry of Lester B. French, the Commissioner has denied a petition for certiorari. The land in question is in the Los Angeles, California, land district. The protest alleges that it contains a deposit of beaumontite carrying alumina or aluminum oxide or about 12½ per cent. of pure aluminum metal. For this reason it is claimed that the land is more valuable for mineral purposes than for any other purpose.

At a hearing local officers held that clay found upon the land is not commercially valuable for the alumina it contains. The Commissioner affirmed the action of local officers and dismissed the protest subject to the right of appeal. Due notice was given but the appeal was not filed within the time required by the rules of practice. One was filed later, however.

The Commissioner, while not required to do so, transmitted the entire record with the petition. The record and the exhibits filed with them have received thorough examination and consideration, but the Secretary of the Interior holds that there is no reason apparent for disturbing the action already taken to the effect that the preponderance of evidence fails to show that the mineral contained on the land be extracted at a cost which would justify its exploration. Clays of the character described or even those containing a much larger percentage of alumina exist in large quantities in different parts of the United States, but so far as is known it has not been found commercially valuable to work such clays for the extraction of the mineral contained.

Modifies Decision in Arizona

In the case of the Montezuma Coal and Silver Mining Company, the Secretary of the Interior has modified the decision of the Commissioner of the General Land Office.

The Montezuma Coal and Silver Mining Company claims to be the successor to the patentees of various mining claims in the Phoenix mining district of Arizona.

The claims in question were located in the seventies. In 1901 it was alleged that there were mistakes in the surveys in some of the claims and that the grant described in the patents were not the same lands as defined by the monuments on the ground.

The company in filing new surveys asked that the original patents be recalled and that new patents be issued giving a proper description of the ground held and owned by it. The applica-

tion was denied by the Commissioner, and on appeal the Department held that the company might surrender its outstanding patents, reconvey the land and institute patent proceedings anew as the basis for the issuance of corrected patents. It was stated that failing in this the Commissioner's denial of the petition would stand affirmed. This decision was adhered to on review August 19, 1902.

Following this the company proceeded anew and applied for another official mineral survey of the claims. These surveys were made and returned in 1903. Many of the courses and distances vary more or less widely from those laid down on plats made in 1901.

In 1904 the company filed in the Prescott Land Office three mineral applications based on the latest surveys. In 1906 these papers were called up to the General Land Office. In 1914 these dormant applications were turned up for consideration by the Commissioner and the claimant company was required to show cause why they should not be rejected. The company responded with the petition asking that some mineral surveyor be directed to go upon the ground and ascertain the correct identity of the claims and the land covered by the locations and that correct descriptions be incorporated in new patents. The General Land Office declined to reopen the case.

The legislative intent is held to be that an entry in error because of erroneous description may be cured even after patent, upon the surrender of the outstanding instrument and the relinquishment of title thereunder and the entry be changed to the land intended to be entered if still unsold.

The Department at this time contends that it is unable to formulate a description for patent purposes owing to various discrepancies in service.

A further survey is held to be essential.

This survey should be applied for by the company and made at its expense. It should be executed, the Department declares, with primary stakes and monuments established and described in a survey of 1884. This mandatory survey if found correct and in all respects satisfactory should be approved by the Surveyor General. Thereupon a transcript and plat thereof should be prepared for filing in the General Land Office. Upon the descriptions contained and returned in such a survey new patents could be issued, giving an accurate and precise description of the land to which the company is entitled and this without the necessity of further notice or new application proceedings.

The company accordingly is granted a reasonable time within which to apply for the requisite mandatory survey.

Posting and publication must be had and the applications to entries made in the usual course. In the event the company fails to act its petition will stand denied and the pending applications will stand rejected.

Montana Coal Lands

Instructions have been issued by the Department of the Interior to the Commissioner of the

General Land Office in regard to the Crow Indian coal lands as follows:

The price for lands within the former Crow Indian reservation in Montana was fixed at \$4 an acre when entered under the Homestead law. As to lands entered under the mineral land law the law provided that the price should be that fixed by existing law, but in no event less than that fixed for lands entered under the Homestead laws.

By promulgation of September 9, 1910, the President directed that all the unentered non-mineral unsurveyed lands in this tract be sold at public auction at a price not less than \$2 an acre. The purchaser of each tract was required to pay one-fifth of the price down and the remainder in four equal annual instalments.

Certain lands were designated not to be sold as they were coal in character. Fifty-seven tracts which were sold at the first sale were reported later by the Geological Survey as containing coal. They were classified in 1913 as coal land and the price fixed at from \$10 to \$30 an acre. The question which arose immediately was whether final title should be issued with the reservation of the coal deposit to the United States or was to be issued without such reservation. The United States in offering these lands for sale had classified the areas into non-mineral and mineral. The lands involved were offered for sale as non-coal and were purchased upon that basis. It would seem therefore as a matter of fair dealing the Department holds the sale so made should be consummated in the regular manner.

It is the view of the Department that the purchaser is entitled to an absolute patent as there was no known-coal under the tracts at the time of purchase. The law authorizes the President to dispose of the lands remaining unentered upon such terms and conditions as he sees fit. There is ample authority granted by Congress to dispose of the land, even if coal, upon such terms as may be deemed advisable. Even assuming that under the law it might be within the power of the Department to require these purchasers to take a limited patent under the circumstances of the sale in which the tracts were offered by the United States as non-mineral it is held that absolute patents should be issued.

CHICAGO INCREASE JUSTIFIED

Other Points Also Must Pay Additional 25 Cents on Gross Ton

A few days after the decision in the anthracite coal cases, the Commission handed down its ruling in the matter of anthracite coal rates to Chicago and other points from Pennsylvania mines. The Commission justified an increase of 25 cents per gross ton on the prepared sizes to Chicago and all points taking Chicago rates. Connecting points between eastern and western mines near Chicago, such as Joliet and Kankakee, also were included. This also applies to more distant connecting points, such as Peoria, East St. Louis, and St. Louis.

Chairman McChord, of the Commission, rendered the opinion. He said, in part:

"The all-rail movement of anthracite coal to Chicago is annually about 2,500,000 tons, and the movement by water in 1913 was 1,083,712 tons.

"Anthracite coal is not sold f.o.b. at the mines, but at such a price per net ton in Chicago as preserves to the producer of coal the advantage of the 25 cents, so that the producer realizes more profit on the through shipments to Chicago than on the local shipments to Buffalo or on the through shipments to points between Buffalo and Chicago. The service at Buffalo is the same as to coal hauled to Buffalo consigned to Chicago at the proportional charge of \$1.75 as to coal hauled to Buffalo consigned to points west in Ohio, Indiana, and Michigan. The Pennsylvania R. R. Co. and its affiliated line, the Pennsylvania Co., hereinafter referred to as the Pennsylvania, publishes no through rate via its Buffalo route. The Erie R. R. Co. and the Chicago & Erie R. R. Co., operating jointly, hereinafter together referred to as the Erie, maintain only one rate to Buffalo, which is \$2, regardless of the destination of the shipment all rail. The Erie, since this proceeding was begun, established through rates of \$3.50 from the mines to Chicago and \$4 from the mines to East St. Louis and St. Louis via Buffalo and the Niagara frontier, not having heretofore published such a rate, but expects to file a tariff increasing these rates to \$3.75 and \$4.25, respectively, in line with the general policy of respondents as disclosed on this record. The mean distance from the mines to Buffalo on the Erie R. R. is about 288 miles. From Buffalo to Chicago the short-line distance on that railroad is about 550 miles.

"The record deals primarily with Chicago conditions and the rates to Chicago, because the protestants who appeared at the hearing were coal dealers either at Chicago or at points to which the rate is a combination of the rate to Chicago and the rate from Chicago to the place of destination.

"The entire increase of 25 cents is apportioned as compensation for that part of the through haul between the mines and Buffalo on shipments via Buffalo on the lines running to Buffalo, so that on such shipments carriers will receive no increase for that part of the through haul between Buffalo and the named points of destination, and the rate to Buffalo will be uniformly \$2, regardless of the destination of the shipments. But as to shipments moving west, not via Buffalo, over the Erie or Pennsylvania railroads, which extend by their own rails from the mines to Chicago, the increase is necessarily apportioned over the entire mileage from the mines to Chicago.

"Respondents assert that they have proposed the increased rates in view of a complaint that certain discriminations against dealers in and consumers of anthracite coal

in Ohio, Indiana, and Michigan have been created by the effective rates. Protestants admit the existence of the alleged discrimination, but insist that the only proper way to remove it is by a reduction of the rates to points in Ohio, Indiana, and Michigan, as to which it is alleged that the Chicago rate is unjustly discriminatory, it being urged that the increased rates are unreasonably high.

"This issue is determined by our finding in the *Rates for Transportation of Anthracite Coal, supra*, where a rate of \$2 per gross ton was found to be reasonable for the haul from the mines to Buffalo. Nothing has been made to appear here that would warrant our requiring the trunk-line carriers to accept less revenue on the transportation here involved than they receive on like transportation to the intermediate points in Ohio, Indiana, and Michigan. Whether or not the rates under consideration are properly divided between the carriers east of Buffalo and those west thereof is a matter not raised on this record. "The rates here involved have been justified."

OAK HILLS RATE DECIDED

Divisions Arranged After Carriers Fail to Agree on Them

The long expected decision in the matter of coal rates from Oak Hills, Colo., has been handed down by the Interstate Commerce Commission. This proceeding is supplementary to a former case which was decided last year. The original report required the establishment of rates of bituminous coal from Oak Hills, Colo., on the Denver and Salt Lake Railroad, through Denver, to stations on the Chicago, Rock Island & Pacific Railway.

The carriers failed to agree upon the divisions of the joint rates. The official carrier consequently petitioned the Commission to make an order prescribing just and reasonable divisions for each of the carriers.

In its ruling the Commission says in part:

"Our original report required the establishment, September 1, 1914, of joint rates on bituminous coal from Oak Hills, Colo., on the Denver & Salt Lake Railroad, hereinafter called the Moffat road, through Denver, to stations on the Chicago, Rock Island & Pacific Railway, hereinafter called the Rock Island, in Kansas, Nebraska, and Missouri. The rates prescribed were on the basis of the rates then in effect from the Walsenburg, Colo., coal district by way of Pueblo and the Rock Island to the same destinations. The report concluded as follows:

"It is the expectation of the Commission that the Moffat road and the Rock Island will be able to agree upon divisions of such rates. No opinion is expressed here as to the reasonableness of the divisions which the Rock Island asks east of Denver, nor of the divisions which the Moffat road offers to the Rock Island."

"Upon all of the facts of record we find that the Moffat road is entitled to divisions on coal,

soft, all kinds but nut, slack, and pea, of \$1.18 per ton, and on coal, soft, nut slack, and pea, of \$1.12 per ton, on shipments to all destinations on the line of the Rock Island in Kansas, Nebraska, and Missouri shown in Moffat road tariff I. C. C. No. 20."

ASKS OUTLET SOUTH

Utah Company Makes Plea for Through Route to San Diego, Calif.

Several interesting facts with regard to the coal rate situation in Utah are developed in a brief submitted to the Commission by the Consolidated Fuel Company of Salt Lake City.

This company instituted proceedings against the Atchison, Topeka & Santa Fe Railroad, for the purpose of obtaining a through route and joint rate on coal from the mines of the plaintiff in the Castle Gate District, Carbon County, Utah, to points beyond Los Angeles.

Futile efforts had been made to get the railway company to provide a through route and joint rate on Utah coal to San Diego. This would be necessary to secure tariff parity with coal from New Mexico points to the same destination.

OREGON COMPANY LOSES

Columbia Gold Mining Company Must Pay Combination Rate on Oil

In the case of the Columbia Gold Mining Company, of Sumpter, Ore., against the Oregon-Washington Railroad and Navigation Company the gist of the Commission's decision is as follows:

"Cancellation by Oregon-Washington Railroad & Navigation Co. of a joint rate on ore and concentrates in carloads from Baker, Ore., through Portland, Ore., to Tacoma, Northern Pacific Railway from Portland, leaving applicable a combination rate based on Portland higher than the rate canceled and also higher than the rate applicable on the Oregon-Washington Railroad & Navigation Co.'s through line is found to have been justified. The complaint was dismissed."

A portion of the report of the Commission says:

"The Columbia Gold Mining Company, by complaint, filed April 18, 1914, alleges that the defendants' rate for the transportation of ore and concentrates in carloads from Baker, Ore., to Tacoma, Wash., is unreasonable.

"Complainant's ore and concentrates are transported from its mine to Sumpter by wagon and thence by the Sumpter Valley Railroad, a narrow-gauge line, 28 miles to Baker on the Oregon-Washington Railroad & Navigation Co.'s line to Tacoma. As the rate to Baker is not involved, the shipments in controversy may be considered to originate at Baker.

"Prior to 1910 the Oregon Railroad & Navigation Co., the predecessor of the Oregon-

Washington Railroad & Navigation Co., hereinafter called the Oregon-Washington Co., did not operate between Portland, Oreg., and Tacoma, and for a period of 13 or 14 years previous to 1910 maintained a joint rate of \$5.50 per net ton on carload shipments of ore and concentrates from Baker to Tacoma in connection with the Northern Pacific Railway beyond Portland. Prior to July 6, 1909, this rate applied on ore and concentrates worth not more than \$100 per ton. In 1910 the Oregon-Washington Co. extended its operations by trackage arrangements with the Northern Pacific from Portland to Tacoma and established the same rate from Baker to Tacoma over its own line as applied in connection with the Northern Pacific. The plant of complainant's consignee at Tacoma is located on the tracks of the Northern Pacific, but under a proper tariff provision the Oregon-Washington Co. absorbed the switching charges so that the cost of transportation paid by complainant was exactly the same over either route. On April 4, 1914, the Oregon-Washington Co. canceled the joint rate described with provision for the application of the combination rate based on Portland, \$9 per ton, value not exceeding \$200 per ton. The \$5.50 rate over its own line and the provision described for the absorption of switching charges at Tacoma were continued and are still in effect. The cancellation of the joint rate represents an increase in the rate involved subsequently to January 1, 1910. The principal issue is whether the joint rate should be restored.

"Complainant apprehends that some future change may require it to pay the terminal switching charge at Tacoma in addition to the present through rate, contending that the absorption of switching charges, although plainly provided for by tariff, is in direct contravention of law. Section 6 of the act to regulate commerce provides that carriers' tariffs shall—
* * * state separately all terminal charges
* * * and all other charges which the Commission may require, all privileges or facilities granted or allowed, and any rules or regulations which in any wise change, affect, or determine any part or the aggregate of such aforesaid rates, fares, and charges, or the value of the service rendered to the passenger, shipper, or consignee. * * *

"The Commission may determine and prescribe the form in which the schedules required by this section to be kept open to public inspection shall be prepared and arranged and may change the form from time to time as shall be found expedient."

"Pursuant to the authority conferred by this section we have provided by rule 103 of Tariff Circular 18-A that—

"If part or all of the charges of a terminal or switching road are to be absorbed by a connecting road, the tariff of such connecting road must specify that its rate includes originating or delivery services by the terminal or switching road, and that the connecting road will absorb the charges of such terminal or switching road in a specified sum, or as per the current tariffs of the terminal or switching

road (naming it) as on file with the Interstate Commerce Commission."

"This rule has been followed by defendants in publishing the tariff under which the Northern Pacific's switching charges at Tacoma are absorbed by the Oregon-Washington Co.

"Upon all of the facts of record we find that it was not unlawful for the Oregon-Washington Co. to cancel the joint rate involved and that defendants have justified the increased rate assailed."

Midcontinent Oil Rates Fixed

In its decision with regard to Midcontinent oil rates in the case of Milliken Refining Co. v. Missouri, Kansas & Texas Ry. Co., the Commission fixed reasonable rates on petroleum, oil and its products from the midcontinent oil field, in Kansas and Oklahoma, to Kansas City, St. Louis, Chicago, and various other points.

All points in the midcontinent field were grouped with respect to rates to the Mississippi River and points beyond, including St. Paul territory, Winnipeg, Salt Lake City, and Denver.

Reasonable maximum rates were prescribed on low-grade products from midcontinent points to St. Louis and Chicago.

To Hear Colorado Case

The case of the Colorado Fuel Company vs. Missouri, Kansas & Texas and the Colorado Southern Railway, and the Oklahoma Fuel Company vs. the Missouri, Kansas & Texas, will be the subjects of a hearing in Wichita, September 16, before Examiner Wilson.

A hearing has been assigned for September 9 at Washington in the matter of coal and coke from points on the Louisville & Nashville to points on the Big Four.

Coal rates from Virginia mines and coke rates from Virginia points also will be considered at this hearing, which will be before Examiner Gartner.

INCREASE ALLOWED

Bituminous Coal Rates in Southeast are to be Higher

In the matter of bituminous coal and coke rates from mines and ovens in Alabama, Illinois, Kentucky, and Tennessee to Mississippi River crossings and various junction points in Tennessee, Mississippi, and Louisiana, the Commission holds that the proposed increased rates on coal to New Orleans, La., Memphis, Tenn., Greenville, Natchez, and Gulfport, Miss., Baton Rouge, La., and certain other points in Mississippi and Louisiana are justified.

Proposed increased rates on coal to Jackson, Vicksburg, Newton, and certain other points in Mississippi and Tennessee are not justified. Increased rates to Vicksburg from Illinois and Kentucky are justified.

Certain increases as shown herein to Meridian and other Mississippi points, and to Jackson, Milan, and other points in Tennessee are justified.

Increased rates on coke to Mississippi Valley points are justified.

Find Pig Iron Rate Unreasonable

In the case of the Sloss-Sheffield Steel & Iron Co., et al., versus the Louisville & Nashville Railroad Co., the Commission held that:

The rates on pig iron in carloads from points in Alabama and Tennessee to points reached by defendants' lines in central freight association territory, to which pig-iron rates were not reduced on October 1, 1914, are unreasonable. Reasonable rates are prescribed for the future.

Divisions of such rates between the carriers operating north and those operating south of the Ohio River, are prescribed.

Vulcan Gold Case Up

A hearing has been assigned by the Commission to take place in St. Louis October 1 before Examiner Wilson. Among other cases is a complaint of the Vulcan Coal & Mining Co. against the Illinois Central R. R. Co. which will be considered.

Claim Failure to Reconsign

A complaint has been filed with the Commissioner by the Middle West Coal Co. vs. Chesapeake & Ohio R. R. Demurrage charges were collected, alleged to have been caused by the railroad's failure to reassign the car promptly.

Ferro-Manganese Rates

Ferro-manganese rates will be discussed at a hearing in Cleveland, September 20, according to an assignment made by the Interstate Commerce Commission. It will be before Examiner Mattingly.

The matter of rates on petroleum production from Kansas points to various interstate destinations will be the subject of a hearing in Cleveland, October 19. Examiner Brown will preside.

CANADA MAKES REPORT ON ALASKA METEORITES

An interesting study of the meteorites in Gay Gulch and Skookum in the Yukon district of Canada, just has been issued by the Canadian Department of Mines. The author is R. A. A. Johnston.

These meteorites were discovered in the course of gold mining operations near Bonanza Creek in the Klondike. They are remarkable for the amount of nickel-cobalt they contain. It is the general belief that they fell in the same shower.

AETNA COMPANY UNDERTAKES EXPERIMENTS WITH GASOLINE

Concern Which Has Been Trying Out Rittman Benzol Process Makes New Contract with Bureau of Mines

Arrangements just have been completed by Van H. Manning, Acting Director of the Bureau of Mines, with the Aetna Explosives Company, for experimental work with the Rittman process, for the refining of gasoline.

It is a portion of the agreement that all patentable devices be dedicated to the Secretary of the Interior, as trustee of the public, and that no royalty or other perquisite will devolve in any way upon the company.

The satisfactory progress being made by the Aetna Company in its experimental work in the production of benzol by the Rittman method, induced them to undertake the work with gasoline as well.

Mr. Manning emphasizes the fact that no commercial product, in connection with the experimental work, is being manufactured.

WINCHESTER MAKES PRELIMINARY REPORT ON WESTERN OIL SHALES

A preliminary report which is expected to be of considerable scientific importance and of some economic usefulness has been made by D. E. Winchester, who is conducting a party in the oil shale region of Colorado and Wyoming. Distillation tests have been made over a wide area by the use of a portable distillation plant.

He has ascertained, roughly, the oil producing capacity of the shales at numerous points. His preliminary report will be ready for distribution in about six months.

MINING CONGRESS ALWAYS READY TO HELP MEMBERS

Any member of the American Mining Congress is entitled to apply to the Washington office for any service which can be rendered. Matters will be laid before any department or will be taken up with the White House. Oftentimes more can be accomplished by personal interviews than by correspondence.

Washington has a wealth of reference facilities. These are at the service of the members of the American Mining Congress if anyone will acquaint the secretary with his desires.

The staff of the Washington office is always at your service.

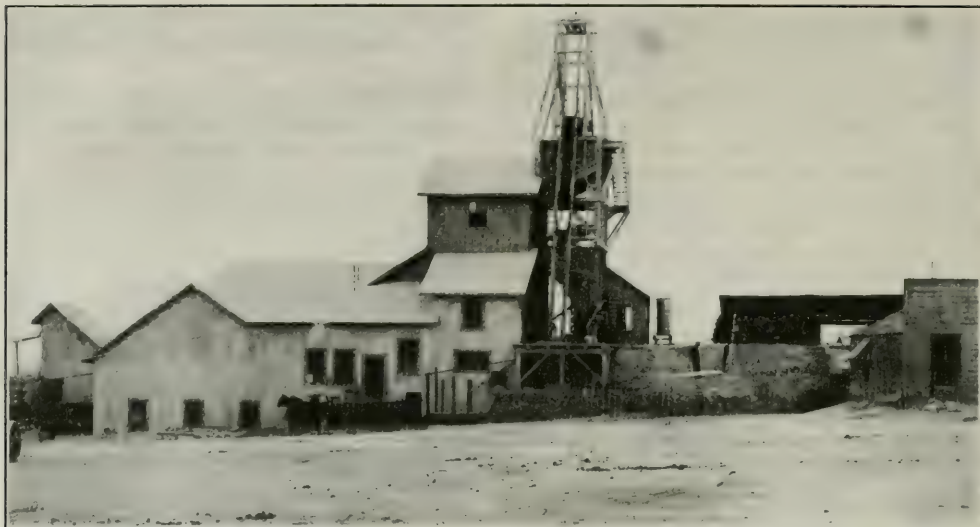


Photo by Frank L. Hess, U. S. G. S.

PANORAMA OF THE PAPPOOSE SHAFT BUILDING, ATOLIA, CAL. THIS IS THE LARGEST SCHEELITE MINE IN THE WORLD. IT IS OWNED BY THE ATOLIA MINING COMPANY

SAMPLES TAKEN OF UINTA POTASH ALONG WHOLE RANGE

Samples have been taken at various places in the phosphate deposits in the Uinta range in northeastern Utah and adjacent Wyoming and Colorado.

A. R. Shultz of the Geological Survey, who has charge of phosphate, potash and metalliferous mineral lands for the Board of Land Classification, just has returned from this work and is engaged in making his report. It probably will be several years before any restoration will be made of Uinta phosphate lands.

While in the West Mr. Shultz visited the land office at Portland, Ore., in connection with certain Northern Pacific lands upon which field work has been begun.

PERMISSIBLE EXPLOSIVES DISPUTE SETTLED QUICKLY

J. R. Fleming, of the Bureau of Mines staff, has received this letter from Wm. Johnson, vice-president of the Oliphant-Wasson Coal Company of Vincennes, Ind., relative to the dispute over the use of permissible explosives in one of the company's mines:

"We reached a settlement yesterday on your strike. The permissible contract was sustained by the National Board and the men ordered to work. This gives us all the contract rights enjoyed by Paxton or any other mine in this field.

"We had ten weeks of idleness in the fight for 'Safety First' but I feel that a great many things besides permissible powder have been settled by this."



NEWHOUSE AND CACTUS MILL NEAR NEWHOUSE, UTAH.

MINERS FARE WELL AS TUNGSTEN PRICES DOUBLE

**Big Mines in Boulder County, Colorado, Are
Working Full Handed and
Full Time**

**Situation Unnatural, But Present Price Level
May Be Sustained if Steel Trade
Continues Active**

At the outbreak of the European war the American tungsten market was very dull and prices were comparatively low, about \$6.50 a unit (1 per cent. of a short ton). The ores mined in Burma, Australia and other countries came into competition with the American ores and many of the prospects were unworked.

DEMAND INCREASES

There is a normal demand for tungsten to be used in "high speed" tool steels, which fluctuates with the steel trade. A smaller, but growing demand, for tungsten for incandescent electric lamp filaments, for electric contacts, wire for dental work, exists. When the orders for shrapnel shells and other war steel began to be filled the demand for high-speed steel for tools with which to turn and bore the shells became very great. Great Britain placed an embargo on the shipment of tungsten ores from every part of the empire so that the Burmese, Australian and New Zealand ores were cut off, and it is said that very little ore has come from Portugal. Following these events, the price rose until \$12.50 or more per unit has been paid for ores carrying 60 per cent. or more of tungsten trioxide. Small tonnages of Japanese scheelite, Peruvian hubnerite and some Bolivian wolframite have been coming to this country, but not in lots large enough to disturb market conditions, and the large mines in Boulder County have been working full handed and full time. As with antimony, the users of tungsten have been scouring the country for tungsten ores, and although the price for ores is largely a matter of individual bargaining, in general, the miner has fared well.

DEPENDS ON WAR

The situation is unnatural and depends almost wholly upon the duration of the war, according to the Geological Survey's experts. If at its close the steel business in this country is active, prices may stay near present level, though they will probably be somewhat lower. If the steel business is inactive, tungsten probably will be low.

Lyon Getting Results

D. A. Lyon, of the Bureau of Mines, who has been conducting chloridizing, roasting and leaching processes for the recovery of lead from low grade ores, reports gratifying results.

WALSH CHARACTERIZED AS "PASSIONATE RED"

The following arraignment of Frank P. Walsh appeared in a recent issue of the *New York Times*:

"After two years of labor, costing some \$500,000, the United States Commission on Industrial Relations is hopelessly divided in opinion, and utterly discredited in public estimation. Its chairman, Mr. Frank P. Walsh, is the architect of its futility. From the moment that he first opened officially his untiring mouth until now, his course has been one continuous crescendo of prejudice and malice against employers, or self-magnification, of radical and socialistic fury. He has harried and insulted witnesses in his ludicrously styled 'investigations.' He has set drumhead 'investigators' to work on his own hook, and they have 'reported' to him in 'reports' frothing with his rabies against 'wealth,' and he has 'reported' to the public. He has acted as the commission. His proposal that Congress prohibit by confiscatory inheritance taxes fortunes of more than \$1,000,000 is but a specimen of his temper and intellectual make-up.

"With the unbiased members of the commission eager to find the facts, approaching them in a candid spirit, to present them uncolored, every fair-minded person must sympathize. Mr. Walsh has his conclusions ready made. He indicts, he prosecutes, he convicts.

"Upon what and whose recommendation, solicitation, or guarantee was this passionate Red appointed to the commission as one of its 'impartial' members, supposed to represent the general public? Who is responsible for Walsh?"

IDAHO MINING ASSOCIATION TO TEST WATER-POWER RULING

The Idaho Mining Association announces its intention to bring suit to determine whether the recent ruling of Attorney General Gregory regarding control of water courses and water power will stand a court test and to carry the case to the Supreme Court of the United States if necessary.

The test case will be instituted by Senator Ravenel Macbeth, secretary of the mining Association, and probably will take the form of an action to file on waters over which the Federal Government has assumed jurisdiction. Later, the association proposes to challenge the right of the Government to withdraw from entry the vast phosphate beds in the southeastern portion of the State.

The mining men of Idaho, who represent practically all classes in this matter, contend that the ruling of the Attorney General is an invasion of the State's right to control waters within its boundaries, particularly as the Bureau has assumed jurisdiction over non-navigable tributaries of rivers, as well as the navigable streams.

Mines More Magnesite

Magnesite, used in making soda-water gas, was produced in the United States in 1914 in much greater quantity than ever before. The production amounted to 11,293 tons. The value of the total output was \$124,223.

North Dakota Lignite Output Increases

An increased production of lignite in North Dakota for 1914 is reported by the Geological Survey. Lignite is the only mineral fuel found in North Dakota. Nearly one-half million tons were mined last year.

OUTSTANDING WITHDRAWALS OF LAND TOTAL 58,399,526 ACRES

Over 19,000,000 Acres Have Been Restored During Wilson Administration, Figures Show

A summary of the principal withdrawals and restorations of public lands during the period March 4, 1913, to June 30, 1915, is shown in the following table:

	Outstanding withdrawn March 4, 1913.	Withdrawn during period.	Restored during period.	Outstanding withdrawn June 30, 1915.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Coal.....	65,410,464	31,390	17,197,580	48,244,274
Oil and gas.....	4,817,706*	494,711	537,999	4,774,418*
Phosphate.....	3,367,378	443,932	1,150,934	2,660,376
Potash.....	133,829	211,384	3,200	342,013
Power site.....	1,857,258	501,400	162,866	2,195,792
Public water.....	86,216	98,431	1,994	182,653

* Recomputation of outstanding oil withdrawal in California shows that the previously reported areas should be increased by 140,404 acres.

A summary of enlarged homestead designations for period March 4, 1913, to June 30, 1915, is shown as follows:

States.	Outstanding on March 4, 1913.	Designations during period.	Cancellations during period.	Outstanding on June 30, 1915.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Arizona.....	26,959,779	1,090,292	3,018,054	25,032,017
California.....	.....	1,996,598	.....	1,996,598
Colorado.....	20,365,536	4,520,676	164,050	24,722,162
Idaho, Secs. 1-5.....	5,497,437	3,038,259	80,591	8,455,105
Sec. 6.....	10,174	76,940	321	86,793
Kansas.....	.....	277,605	.....	277,605
Montana.....	32,046,761	14,802,866	88,814	46,760,813
Nevada.....	49,512,960	350,629	3,558,392	46,305,197
New Mexico.....	17,905,694	5,661,122	192,275	23,374,541
North Dakota.....	.....	8,742,701	3,194	8,739,507
Oregon.....	11,505,449	6,406,399	975,300	16,936,548
South Dakota.....	.....	1,756,332	.....	1,756,332
Utah, Secs. 1-5.....	7,064,397	251,384	168,388	7,147,393
Sec. 6.....	1,199,638	21,786	2,392	1,219,032
Washington.....	3,402,896	865,473	251,482	4,016,887
Wyoming.....	17,591,438	1,202,808	24,596	18,769,650

NOTE—The information contained in the above tables will be brought up to date and published each month in the future.

Smith's Address Being Distributed

A limited number of printed copies of "Practical Ideals," an address delivered by Dr. George Otis Smith, at the University of Illinois, have been printed by the Sigma Xi Society and will be sent on application to Dr. Smith.

PUBLIC FAYS

"Whatever may be the value put on a human life in arranging for a reasonable compensation, these losses of life and labor are national in their extent and character and fall ultimately upon the general public as representing the consumers of mineral products.

"It is important, therefore, not only from a humanitarian standpoint, but also from the standpoint of economics, that everything possible should be done to reduce the loss of life and labor in the mining industry, both through prevention of accidents and through the improvement of health conditions. It is also a matter of decided importance to the public from both the standpoints that these improvements should be brought about at a minimum cost and in a minimum time."

LIBRARIES EXPERIENCE GREAT DIFFICULTIES IN FINDING FULL SETS OF TECHNICAL PAPERS

**"Mines, Minerals and Arts," Published in St. Louis Forty Years Ago, Seems to Have
Disappeared from the Face of the Earth—Complete Set of the Mining
and Scientific Press Seems to be Unobtainable**

Between the years of 1872 and 1878 there was published in St. Louis a journal known as *Mines, Minerals, and Arts*. It was a prominent publication of its day. In it appeared many contributions from leading scientists. Of particularly great importance were a number of articles which had to do with the early study of the Missouri zinc district.

For a number of years efforts have been made to find copies of this publication. The country has been combed for a set of this journal without success. It seems to have disappeared from the face of the earth.

This fact calls attention to the necessity of preserving files of technical journals. Many times the value of the articles which make up this class of journal is not recognizable fully until many years after they have appeared. It is of the greatest importance many times to scientists to be able to secure original writings in regard to technical matters.

MINING PRESS INCOMPLETE

Even as prominent a trade paper as the *Mining and Scientific Press*, which began publication in 1860, cannot be secured in its entirety. Even its publishers have not a complete set. Volumes one to nineteen are not in existence in the libraries of Washington or New York. These libraries are supplied with ample funds to purchase these and other missing volumes, but they have been unable to find them.

The *Engineering and Mining Journal* sets are complete in the Engineering library of New York and the Chemists' Club of New York, but few libraries throughout the country have a complete set of even this publication.

The greatest collection of geological literature in the world is that possessed by the library of the Geological Survey in Washington. In conjunction with the Library of Congress, other libraries in Washington, and the libraries in the departments, it forms by far the greatest technical reference unit in the world.

The survey library has made every effort to secure complete sets of the important mining publications but in very few cases has it been successful in locating early numbers.

In more recent years, the Survey has collected with great care every known publication on mining and allied topics. Each year these are bound and arrangements made for their indefinite preservation.

LOCATE ALL TECHNICAL MATTER

The Survey library is gathering lists of the books in other libraries throughout the world and soon will be in a position to give immediate reference as to the location of practically any technical work, paper or report in existence in the world.

Director Smith speaks very highly of the service rendered in this connection by Miss Julia L. V. McCord, the Survey librarian. Much of the prestige which the library has come to enjoy is due to her highly intelligent and persistent endeavor.

VETERAN GEOLOGIST PREPARES TO ROUND OUT EARLIER REPORTS

G. K. Gilbert, one of the senior members of the United States Geological Survey and one of the most distinguished of all American geologists, is devoting himself this season to geological structure in the Great Basin Region, with the view to the preparation of a broad discussion of what is known as "Great Basin Structure," in the investigation of which Mr. Gilbert was a pioneer.

This work, which is expected to round out his earlier reports on the region, is expected to be a classic on its subject in geologic literature.

TENNESSEE SANDSTONE AND COAL SUBJECTS OF STUDY

G. H. Ashley, a geologist with the Geological Survey, is reviewing some points concerning the identity of sandstone and the correlation of coal beds near the western margin of the Cumberland Plateau in Tennessee. This special examination is made in cooperation with the State Geological Survey of Tennessee. The State Survey is represented by Prof. A. H. Purdue, the State geologist, and Prof. L. C. Glenn, of the State university.

Alaskan Report in Press

The annual progress report for Alaska for 1914 will be one of the most interesting documents of this kind ever published by the Alaskan division of the Geological Survey. It covers all the work done during 1914. It is in press, and will be ready for distribution this month.

PERSONALS

Dr. George Otis Smith, Director of the Geological Survey, spent two weeks recently at his summer home at Skowhegan, Me.

H. D. McCaskey, of the Mineral Resources division of the Geological Survey, left the middle of August for an extended trip among those mining camps of the West where the Survey is doing work.

Dr. W. T. Schaller, of the Geological Survey, is studying pegmatite in California. This is the mineral in which tourmalines and kunzite are found. The latter is the finest pink mineral known.

Max W. Ball of the Land Classification Bureau, of the Geological Survey, was married August 18, to Miss Amelia Maeder, of Boulder, Colo.

John R. Cochran, of the staff of the Bureau of Mines, is spending his annual leave in Battle Creek, Mich.

Dr. David White left Washington August 15 on an extended trip of inspection in the regions where field parties are at work.

Professor F. W. Clark, of the Geological Survey, is spending a month in Lovell, Me.

Frank J. Katz, who is working upon the Portland, Me., quadrangle, for the Geological Survey was in Washington a few days last month to complete his statistical report upon abrasives.

Paul Roundy, of the Geological Survey, just has returned from Idaho and Wyoming where he has been doing general geological work in the phosphate region.

David White, chief geologist at the Geological Survey, spent his two weeks' vacation in Brookfield, Mass., last month.

D. D. Condit, of the Geological Survey, has returned from Idaho where he has been engaged in phosphate work.

Prof. J. L. Grasty, of the University of Virginia, spent some time in Washington last month on technical business.

In the absence of Dr. George Otis Smith, Dr. P. S. Smith is acting as director of the Geological Survey.

Mr. William Maloney, Territorial Mine Inspector for Alaska, will sail September 1 for San Francisco to attend the exposition. He expects also to attend the convention of the Mining Congress which is to be held September 20, 21 and 22.

R. B. Marshall, Chief Geologist of the United States Geological Survey, is in California on a general inspection trip of the work being done in the West under the direction of his division.

W. B. Emory, an assistant geologist of the Geological Survey, has joined W. F. Lupton's party, which is examining lands in the Big Horn Basin for the purpose of oil classification.

Charles A. Davis, of the Bureau of Mines, is in Elliott, Me., engaged in field work in the peat beds of that region.

Dr. G. H. Girty has returned from a study of the stratigraphy of the Mississippi rocks in western Kentucky and southern Illinois. He cooperated with Dr. Stuart Weller of the University of Chicago in Illinois in the study of that section.

Van H. Manning, Director of the Bureau of Mines, will leave September 15 for San Francisco where he will spend two weeks.

W. A. Williams, chief petroleum technologist of the Bureau of Mines at San Francisco, was called to Washington last month by the Secretary of the Interior, in connection with the Osage Indian Oil Lands matter.

Sydney Page, a geologist of the Geological Survey, is on a Western trip. He has been in California and is now at Tyrone, N. Mex. He will return to Washington November 1.

PRODUCERS' COAL CO. BUYS

DERING PROPERTIES AT SALE

The Illinois properties of the Dering Coal Co. at Westville and West Frankfort have been sold under foreclosure sale to the Producers' Coal Co., a corporation recently incorporated in Illinois with F. S. Peabody as president.

The transfer of the properties was made effective August 15. No disposition has yet been made of the Indiana holdings of the Dering Coal Co.

Mr. Peabody will have entire charge of the management of the new company. He is negotiating with J. K. Dering of the J. K. Dering Coal Co., to continue handling the product of these mines.

Anthracite Output Falls Off

Pennsylvania's production of anthracite coal for 1914 amounted to 81,000,000 tons. The value of this yield was \$188,000,000. This represents a slight decrease, as compared with 1913.

GEOLOGISTS WIN RECOGNITION AT SAN FRANCISCO FAIR

Many Medals Awarded Survey for General and Alaskan Work—Publications Take Grand Prize

A silver medal for collaboration has been awarded by the Superior Jury of the Panama-Pacific Exposition to each of the following members of the Geological Survey: A. H. Brooks, J. C. Hoyt, Geo. H. Ashley, Edward W. Parker, S. J. Kubel and Robert B. Marshall.

The complete list of awards by the Superior Jury for the Geological Survey is: Education, Group 12 and Class 37 for scientific investigations, medal of honor; Social Economy, Group 14 and Class 43 for betterment of economic conditions, gold medal; Liberal Arts, Group 29 and Class 101 for black and white copper plate engraving, gold medal; Group 30 and Class 40 for publications constituting a special library on the geology, topography, and mineral resources of the United States, grand prize; Group 31 and Class 112 for maps, charts, atlas, medal of honor; Group 31 and Class 113 for topographic models, bronze medal; Group 33 and Class 123 for transparencies or paintings on glass from enlarged photographs, gold medal; Group 34 and Class 126 for collective exhibit of instruments and methods for land surveying, medal of

honor; Mines, Group 156 and Class 800 for per capita production of minerals, United States, silver medal; Mines, Group 156 and Class 760 for collection of minerals with maps, silver medal.

The list of awards for Alaska follows: Liberal Arts, Group 31 and Class 113 for models in relief of Alaska, bronze medal; Group 33 and Class 123 for seventy-one large colored photographs of scenes of people of Alaska, silver medal; Manufactures, Group 52 and 53 for exhibit of baskets and articles of horn, ivory and wood, silver medal; Agriculture, Groups 120, 121, 132 and 133 for barley, wheat and oats, medal of honor; potatoes, gold medal; grasses, silver medal; cabbage, silver medal; Mines, Group 153 for model of Central Alaska, gold medal; Group 153 for metallic and non-metallic minerals, bronze medal; Group 154 and Class 779 for Geological Survey—panorama and thawing model, silver medal; Alaska Roads Commission, Liberal Arts, Group 40 and Class 194 for methods of construction of roads and bridges, gold medal.

Iowa Employs 16,057 in Coal Mines

Coal production in Iowa during 1914 was practically the same as during the preceding year. The total output was 7,500,000 tons. The number of men employed in the mines of the State increased to 16,057 during 1914.

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In attending the Annual Meeting of the American Mining Congress, at San Francisco, September 20 to 22, 1915, avail yourself of the excellent service provided on America's foremost transcontinental train, the "Golden State Limited"—daily from Chicago, St. Louis, Kansas City and intermediate points via El Paso, Douglas, Bisbee, and Tucson.

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OCT 4 1915

THE MINING CONGRESS JOURNAL

VOL I

SAFETY-EFFICIENCY-CONSERVATION

No. 10



CARL SCHOLZ

Who was elected for a third term as president at the recent
convention of The American Mining Congress

OCTOBER, 1915

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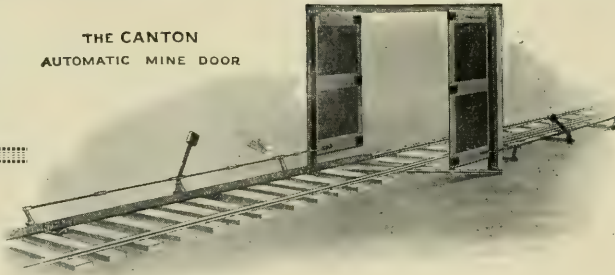
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THE MINING CONGRESS JOURNAL

OCTOBER	CONTENTS	1915
EIGHTEENTH ANNUAL CONVENTION		515
IMPORTANCE ATTACHED TO NEW FINDS AT GOLDFIELD.		517
VOLCANIC ACTIVITY AT LASSEN PEAK		518
CHEMICAL SHOW PROVES GREAT SUCCESS.		521
MANNING ADDRESSES MINING CONGRESS		523
SULPHUR DEVELOPMENT ON TEXAS COAST		529
ENGLISH AUTHORITY PRAISES BUREAU OF MINES		533
EDITING OF GOVERNMENT PUBLICATIONS.		534
CARL SHOLZ ADDRESSES MINING CONGRESS.		535
AETNA CONTRACT CANCELLED FORMALLY		538
HARDER DISCUSSES IRON BACTERIA		539
WOOSTER OIL AND GAS FIELD		541
EDITORIALS.		542
MUNICIPAL COOPERATION.		545
PRACTICAL WORK BEING STRESSED		546
FAY DISCUSSES MINE ACCIDENT STATISTICS		548
NEVADA CAMPS SHOW INCREASED OUTPUT		549
PLATINUM PLAYING PART IN MUNITIONS MANUFACTURE		550
THE MULTIPLICITY OF MINING SCHOOLS		551
ENGINEER RESERVE CORPS		554
PLACER MINES DATA BEING COLLECTED		556
OBSERVATIONS IN SILVER MINES.		557
TRAFFIC		558
RECENT LEGAL DECISIONS		560
PATENTS		563
MINERAL LAND DECISIONS		566
PERSONALS		567

The American Mining Congress

The American Mining Congress is a voluntary association supported by the dues and fees of its members. It is striving to bring about:

First—Safety and efficiency in mining operations.

Second—Intelligent conservation with a view to the highest development and use of our mineral resources.

Third—The stimulation of investment in practical mining operations by showing that mining is a legitimate business when intelligently conducted.

Fourth—Uniformity in state laws governing mining operations carried on under like conditions.

Fifth—Such federal co-operation through research and investigation as will furnish the basis for intelligent state legislation, and will solve those problems of economical production, treatment and transportation which are essential to an increase in mineral production.

Sixth—The improvement of the economic conditions underlying the coal mining industry.

If you are interested in this work, now is the time to help; do not wait until those who are now carrying the burden have become discouraged.

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I hereby make application for membership in THE AMERICAN MINING CONGRESS and agree, if accepted, to abide by the By-Laws, Rules and Regulations of said organization and to pay the dues required by same.

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To the Members of the American Mining Congress:

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Real mining men should be active members. An application blank will be found on another page of this issue.

Associate memberships are designed for those not actively interested in mining, but who are willing to assist a state Chapter of the Mining Congress in helping to develop the Mining industry within the State. All memberships include subscription to the MINING CONGRESS JOURNAL.

Every member of the Mining Congress should undertake to send in at least one application each month. Will you help by having the following blank filled in and mail to this office?

SUBSCRIPTION AND APPLICATION FOR ASSOCIATE MEMBERSHIP
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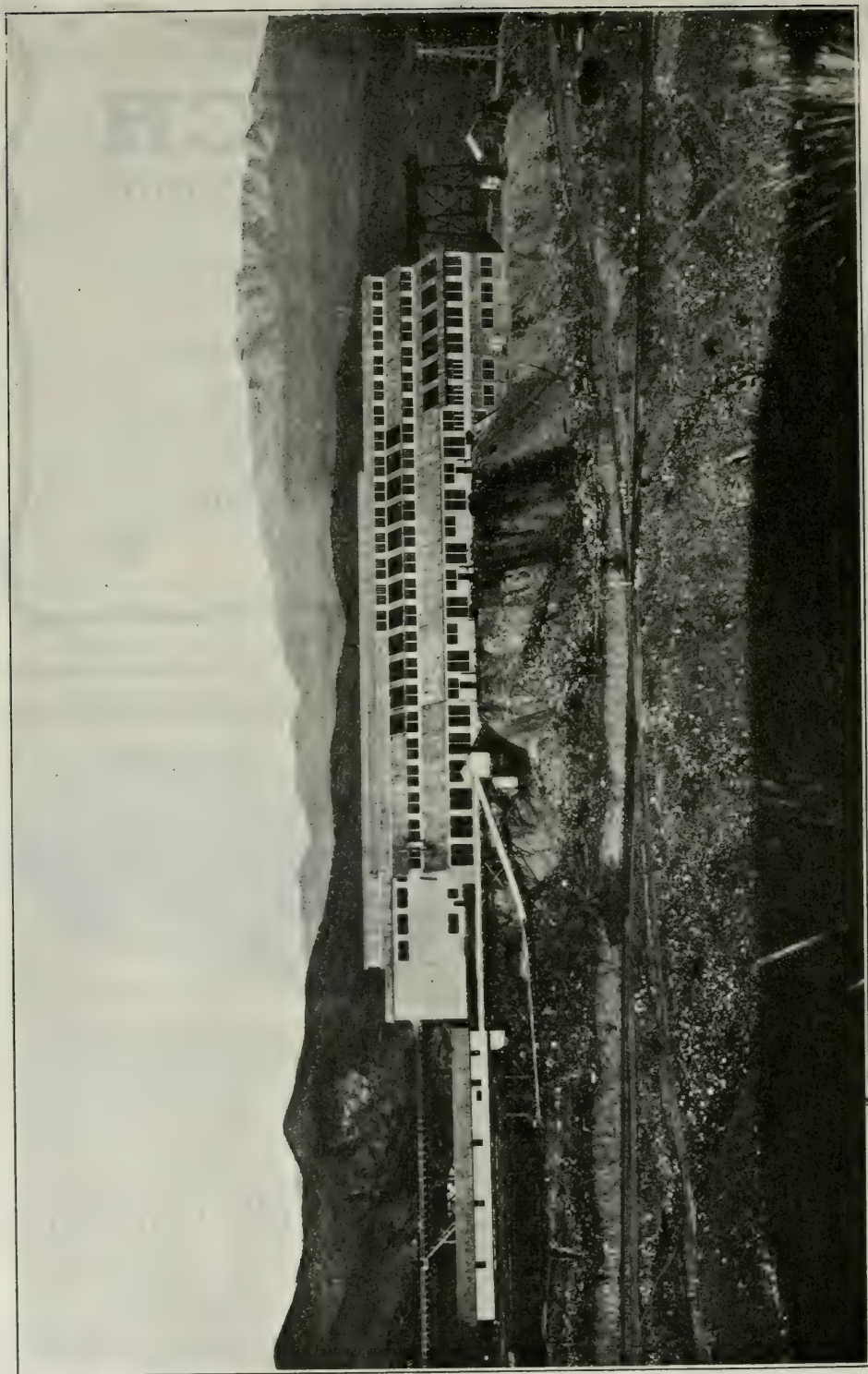
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Official Organ of the American Mining Congress

EIGHTEENTH ANNUAL CONVENTION PROVES UNQUALIFIED SUCCESS

American Mining Congress Meeting at San Francisco Calls Together Notable Assemblage—National Figures Deliver Addresses—Memorial to Dr. Holmes Impressive Service—Important Resolutions Adopted

Few of the eighteen conventions which have been held by the American Mining Congress, were more successful than the San Francisco meeting.

There was a fair attendance of members of the Mining Congress, and a very large attendance of scientific men who had been drawn to the California metropolis by the various technical conventions which were being held there about the same time. Officers of the Congress regarded this as very important as it gave men connected with industries bearing a relationship to mining an opportunity to familiarize themselves with the work being done by the American Mining Congress.

Splendid papers were read to the Congress by Van H. Manning, Director of the Bureau of Mines; George Otis Smith, Director of the Geological Survey; William B. Phillips, President of the Colorado School of Mines; Rush B. Butler, of Chicago, Ill.; Fletcher McN. Hamilton, State mineralogist of California; Professor Willis, of Leland-Stanford University; G. H. Dowell, of Bisbee, Ariz.; Dr. F. L. Hoffman, of Newark, N. J.; Harry L. Day, of Wallace, Idaho, and others.

MEMORIAL SERVICE

Without question the feature of the convention was the memorial service held in commemoration of the late Dr. Joseph A. Holmes. This was an impressive service, in which a large number of prominent technical men from all parts of the United States, as well as prominent citizens of San Francisco, joined in paying remarkable tributes to the man who did so much in the interest of all connected with the mining industry.

Resolutions were adopted at the regular sessions of the convention condemning the Federal Leasing system of Western Natural Resources; urging larger appropriation for the work of the Bureau of Mines; recommending active steps to secure closer relationship between employer and employee; urging cooperation with the Federal Trade Commission; asking the directors to provide a discussion at the next session dealing with the advisability of non-partisan tariff commission; and calling for the opening of negotiations for a wage scale in the coal trade not later than January 1.

Carl Scholz, who has served so commendably for two years as president of the American Mining Congress, was reelected to that office by acclamation.

MANNING HONOR GUEST

One of the most pleasing features of the entire convention was the banquet given in honor of Van H. Manning, Director of the Bureau of Mines. W. L. Saunders, president of the American Institute of Mining Engineers, acted as toastmaster. Senator Newlands, of Nevada; Charles E. Van Barneveld, chief of mines and metallurgy, P. P. I. E.; Dr. J. E. Talmage, University of Utah; T. A. Rickard, editor, *Mining Press*, and Dr. John C. Branner, president Leland-Stanford University responded.

Mr. Manning, in a happily-worded speech, thanked those present for the honor that had been conferred upon him, and took advantage of the occasion to assure them that he would spare no effort to bring about better working conditions in mines and to increase the economic possibilities of the industry.

The new directors of the American Mining Congress, elected at the San Francisco convention to fill the terms expiring this year are: Dr. J. E. Talmage, Salt Lake City, Utah; Charles M. Moderwell, Chicago, Ill., and Dr. William B. Phillips, Golden, Colo.

ASSISTANT DIRECTOR OF BUREAU OF MINES NOT TO BE NAMED NOW

No appointment of an assistant director of the Bureau of Mines will be made for several months. One reason for not filling this place at the present time is the desire to husband the Bureau's rather scanty appropriation.

This position is filled by appointment by the Secretary of the Interior. It is understood, however, that the Secretary usually names the person recommended by the director of the Bureau of Mines. It is probable that Mr. Manning will not undertake to consider any one for this place for several months.

MINERS' CIRCULARS ARE TO BE PRINTED IN FOREIGN LANGUAGES

Arrangements have been made by the United States Bureau of Mines for the publication of its miners' circulars in foreign languages. So far as has been decided, the translations will be made into Italian, Hungarian and Slovak. Other languages will be decided upon in the near future.

It is the intention to print the circulars in English and in the foreign language in parallel columns so as to facilitate the acquiring of a knowledge of English. There are 200,000 miners in the United States who do not read English.

GEOLOGICAL SURVEY OPENS OFFICE IN AUSTIN, TEX.

An office of the water-resource branch of the Geological Survey has been opened at Austin, Tex. G. A. Gray has been designated to take charge of the new branch.

Mr. Gray for a number of years was the district engineer of the Survey at Santa Fe, N. Mex., and has a large acquaintance among Western mining men. He also has been a member of the Land Classification Board staff, with duties in New Mexico and other parts of the Southwest.

Lamp Approved by Bureau

The Koehler safety lamp, manufactured by the Koehler Mfg. Co., of Marlboro, Mass., has been approved as permissible for use in gaseous mines by the Bureau of Mines. The only globes so far approved for use for these lamps are those known as Macbeth high-speed, No. 2100, manufactured by the Mackbeth-Evans Glass Co., Pittsburgh, Pa.

PRECAUTIONS TAKEN TO SUPPRESS FACTS ABOUT MOLYBDENUM

The Government has been unable to obtain reliable information as to the amount of molybdenum being used. All users of the metal are adopting the most rigid regulations to prevent knowledge leaking out as to the quantities being consumed. One manufacturer, for instance, has his supply of molybdenum sent to his residence. He personally carries it to the plant, so as to keep the knowledge of the amount used with as few persons as possible.

DOLLAR EXCHANGE IS BEING USED IN NITRATE PURCHASES

New York exchange has taken the place of London exchange for Chilean nitrate sales, according to a report received by the Bureau of Foreign and Domestic Commerce, Department of Commerce, at Washington. Consul General Keena at Valparaiso announces the sale to an American firm of 4,000 tons of nitrate with payment by draft on New York for \$155,000. However, he adds that since there is no American bank in Chile, much of the benefit of the tendency to establish dollar exchange must be lost, as this type of exchange only is favored temporarily by foreign banks.

TENNESSEE IS INCREASING PHOSPHATE OUTPUT DECIDEDLY

Tennessee is increasing its output of phosphate very decidedly according to information received at the Geological Survey.

One of the features of the development of the phosphate industry in Tennessee, is the fact that the product is being conserved by the use of modern mining and milling methods. Formerly, there was great loss due to unsystematic mining methods.

Ellsworth Recalled from West

To take the place of G. A. Gray on the staff of the Land Classification Board, C. E. Ellsworth has been recalled from the Northwest to take up these duties in the Washington office. Mr. Ellsworth has been doing water-supply work in Washington, Oregon, Alaska and the Northwest in general.

He will report upon irrigation and Carey Act projects. He also will assist in making enlarged homestead designations.

Studies California Copper.

B. S. Butler, in charge of copper investigations for the Geological Survey, has returned from the copper mines of northern California, where with L. C. Gratton he has been conducting investigations for the past several weeks. In addition, Mr. Butler looked over the Promontory zinc deposits in Utah. He also visited the tungsten deposits at Lucin, Utah.

IMPORTANCE ATTACHED TO NEW FINDS AT GOLDFIELD

F. L. Ransome Returns from Important Inspection Trip through Western States

An extensive trip through the West just has been completed by F. L. Ransome, of the Geological Survey. At Goldfield, Nevada, he found that in a general way results of deep mining have confirmed those obtained during the study of the district in 1905-08. A number of deep workings have gone through the volcanic rocks into the Cambrian shale.

The shale in most places seems to mark the lower limit of the ore bodies, although one mine is at present producing high-grade ores from stopes in Cambrian rock.

While Mr. Ransome considers it entirely possible that ore bodies may be found in the granite below the shale, yet, owing to the irregular character of the contact between the granite and shale, it would be difficult to predict the depth at which this contact will be reached. Such ore, if present, would be found to be of comparative low grade and probably would be expensive to mine.

Encouraging features of the present development at Goldfield, Mr. Ransome finds, are the discovery of ore in the Atlanta ground and at the Kewanas. The latter property is the most northerly in the group of mines adjacent to Goldfield.

Mr. Ransome also visited Manhattan, where H. G. Ferguson, of the Geological Survey, is making a detailed geological map and is studying the lode and placer mines. Mr. Ransome spent two days in conference with Mr. Ferguson and in examining this district. He also went over the general quadrangle work in that section.

The Napa quadrangle is being mapped by Prof. C. F. Weaver, of the University of Washington, in cooperation with the geologists of the University of California. The quadrangle contains a few quicksilver mines, none of which is active at the present time, however. The U. S. Geological Survey will publish the result of this work as a geologic folio. Mr. Ransome visited this area and consulted with the geologists engaged in the work.

The Tesla, San Jose, Pleasanton and Mt. Hamilton quadrangles also were visited by Mr. Ransome. These quadrangles have been mapped geologically by the professors and students of geology and mining at Leland-Stanford University. These maps, with descriptive text, will be published by the U. S. Geological Survey as a folio. The region contains one active magnasite mine and some manganese prospects.

Coal was mined extensively for many years at Tesla. Large pottery works utilized the fire clay mined in connection with coal. Owing to the competition of California oil, the mines have been idle some years.

With Dr. Ralph Arnold, Mr. Ransome examined the Ventura, Santa Paula and Hueneme quadrangles which have been geologically mapped by Dr. Arnold and assistants. These maps will be published as the Ventura folio by the Geological Survey. The region contains a number of active oil fields, and shows in a very interesting way the relation of oil occurrence to geological structure.

Near Santa Paula, the Montebellow field is a very active producer of high-grade oil from a well-defined anticlinal dome. This oil is accompanied by considerable gas, which is being impressed upon the ground into gasoline.

F. J. BAILEY APPOINTED CHIEF CLERK OF BUREAU OF MINES

Owing to the long absence of the late Dr. Joseph A. Holmes prior to his death several features in the organization of the Bureau have been left unsettled.

With the appointment of Van H. Manning to the directorship, work of getting the staff into permanent shape has begun. The first step in this direction was the appointment of F. J. Bailey as chief clerk. He had been discharging the duties of this position since the departure of Dr. Holmes for the West.

While Mr. Bailey is from Vermont, he has a very wide acquaintance among mining men. He is particularly well known in New Mexico mining camps, where he has had occasion to make a number of trips in the discharge of various missions connected with the work of the Bureau of Mines.

Mr. Bailey was born at Groton, Vt., in 1878. In 1901 he graduated with the degree of bachelor of arts from Middleburg College, Vt., and in 1910 he became a graduate of the law department of Georgetown University. He first entered the Government service in the Philippine Islands as principal of the provincial secondary school at Oriental Negros, where he served from 1901 to 1905. In the latter year he became private secretary to the late Senator Proctor. He held this position until 1908, when he became clerk to the Federal Immigration Commission, remaining there until 1910, when he became private secretary to the late Dr. Joseph A. Holmes. In 1914 he was made assistant chief clerk.

PROF. HOOD ACTS FOR DIRECTOR OF THE BUREAU OF MINES

During the absence of Van H. Manning, director of the United States Bureau of Mines, Prof. O. P. Hood, of Pittsburgh, chief mechanical engineer of the Bureau, acted for the director. Professor Hood was for many years a member of the faculty of the Michigan College of Mines.

Mr. Manning attended the convention of the American Mining Congress, as well as that of the American Institute of Mining Engineers.

VOLCANIC ACTIVITY AT LASSEN PEAK ABOUT OVER, GOVERNMENT GEOLOGIST THINKS

Dr. J. S. Diller Returns from Detailed Study of Only Active Volcano in United States Proper—Period of Activity of California Mountain Nearing Close, He Thinks

One of the recent events of most interest to American geologists is the volcanic activity which is taking place at Mount Lassen, California, Dr. J. S. Diller, of the Geological Survey, who was detailed specially to study this activity, has just returned from Mount Lassen with a large supply of data and an interesting collection of photographs.

Volcanism is a study which has attracted wide interest since the earliest times. It has proven baffling, however, in so far as the origin of volcanic activities is concerned. There is little definite knowledge even as yet in regard to many of the salient features in connection with volcanic activities.

The old theory that volcanoes are vents of the molten center of the earth, has been exploded. There is no question that the activities often times have their origin in a molten mass, but the size of the mass is a matter which has never been determined in any particular case of volcanic activity.

In the case of Mount Lassen, there is no question that it is a pure type of active volcano, but the amount of volcanic activity has been limited, as compared to the better known volcanoes throughout the world.

ACTIVE OVER A YEAR

It has been active since May 30, 1914. The most important eruption took place May 22, 1915. There have been, however, more than one hundred different explosive eruptions. During these eruptions there have been no distinctive flows of molten material in the manner which is so well exhibited in the volcanoes of Hawaii, Alaska and Italy.

A mass of lava did appear on the top of Mount Lassen and filled the crater that was formed during the first year of its activities. At the present time, the volcano, instead of having a well-marked blow-hole, is capped by a small, flat area. The lava which came out formed a table which made a lid over the former depression between the two peaks on the top of the mountain. Indications are that the mountain will not be so active hereafter.

The latest developments are at the northwest corner of the mountain and it is not easy to predict the outcome.

During his recent visit, Dr. Diller was accompanied by Dr. Arthur L. Day, the director of the geophysical laboratory of the Carnegie Institute. Dr. Day was assisted by P. S. Shepherd. They spent the greater part of July studying the activities of the peak, and a considerable amount of material was collected.

There was a great deal of heat present in the mass of material which was thrust up by

the mountain. A great volume of snow was melted and the resultant water swept down the mountain side. Trees were carried for miles and much soil was washed up and deposited in the valley. This led to the early reports that there had been an extensive lava flow, but Dr. Diller's investigations show that what had been classed as lava was entirely material from the outer surface of the mountain.

The lid which formed over the crater directed the blasts of hot gas downward. The force of these blasts were so great as to break off trees at a distance of two miles from the crater. The gases were so hot that much of the green foliage was charred.

SURPRISES GEOLOGISTS

Dr. Diller, in commenting on the eruptions says:

"The recent eruptions of Lassen Peak have been a great surprise not only to the residents of the district, but also to most of the geologists who are more or less familiar with the decadent volcanic energy of the Cascade Range. It is generally considered the 'land of the burnt out fires,' and so it is; but although the fires may be out, there is much evidence of remaining heat in some places upon the summits of the great volcanoes, as in the case of Shasta and Rainier and in others about the base of the mountain, where basaltic eruptions are likely to follow around an andesite cone.

"Of all the great extinct volcanoes of the Cascade Range, Lassen Peak is the richest in solfataric action. Southeast of Lassen Peak there are Bumpass' Hell, Lake Tartarus, the Geyser, and the Devil's Kitchen, beside many other hot sulphurous springs, all of which are exhibits of volcanic energy, and a short distance to the northward is the Cinder Cone, a national monument which marks the scene of one of the latest volcanic eruptions in the United States.

"Most of the dust ejected falls within a radius of a mile, but some has been carried by the wind as much as 15 miles to the southward, and the sulphurous fumes are said to have been recognized at about the same distance. A quarter of a mile from the crater, to the southwest, the sand and dust layer on the snow was 3 inches thick, and being wet, looked from a distance, black and peculiar on the white snow. When dry this dust is very light and easily carried by frequent whirlwinds into the air to make the mountain look as if it were smoking. Forest rangers who were



WRECK OF FOREST SERVICE STATION ON MT. LASSEN

in the neighborhood of the summit during eruptions heard the rushing steam and the falling rocks, but report no rumbling or subterranean noises, earth shocks, electrical phenomena, or great heat beyond that of the escaping steam.

"Considerable volumes of water were ejected, probably wholly in the form of steam. The water condensed as rain, but there was not enough of it to produce any marked effect by eroding the surface, and the phenomenon is in no proper sense a geyser where water is the plug ejected by successive eruptions. In Lassen's new crater the plug is rock matter.

"The activity appears to be limited to a comparatively shallow depth at the summit of the mountain.

"Nearly all the hot springs and solfataras about Lassen Peak have been visited recently and the common opinion found true that there is no evidence of increased intensity in the solfataras since the eruptions from the summit of Lassen Peak began.

"There are excellent views of Lassen Peak at a distance of about 50 miles, from the Southern Pacific trains between Redding and Cottonwood, especially at Panorama Point, a few miles south of Anderson.

"The forest service at Mineral, W. J. Rushing, forest supervisor in charge, has an outlook station on Brokeoff Mountain, in full view of Lassen Peak, only a few miles away to the northward. Mr. Rushing's observers are on Brokeoff Mountain, a part of Lassen's oldest crater rim, continuously, and have an excellent opportunity to make a complete record of Lassen's activity, a service of great importance.

"Lassen Peak may be reached from Redding, on the Southern Pacific Ry., thence by motor to Viola P. O. and Manzanita Lake, but the motor trip is long and the mountain climb from the northwest is hard.

"A better way is from Red Bluff, on the Southern Pacific Ry., thence by motor to Mineral Postoffice, thence horseback 12 miles to the foot of the mountain, and an easy climb of about an hour and a half to the summit from the southeast.

"The best way is from Drakesbad on the southeast, only 7 miles from the mountain. Drakesbad, formerly Drake's Springs, is an attractive mountain resort in Hot Spring Valley, from which not only Lassen Peak but also Cinder Cone and other interesting volcanic phenomena may be easily visited.



MT. LASSEN

"Drakesbad is a 30-mile motor ride from Westwood, the fine hoteled terminus of the Southern Pacific branch line from Fernley, Nev., to Susanville. There is a through sleeper from San Francisco to Susanville on train No. 6.

"The Western Pacific Ry. affords an easy approach by way of Keddie and thence by motor to Westwood, or from Doyle to Susanville."

IDAHO SILVER, LEAD AND ZINC PRODUCTION INCREASES

Boise County Leads State in Gold Production—Coeur d'Alene Responsible for Silver Increase

The value of the mine output of gold, silver, copper, lead, and zinc in Idaho in 1914, according to C. N. Gerry, of the United States Geological Survey, was \$24,645,848, against \$24,149,049 in 1913 and \$21,466,521 in 1912.

There were good increases and record productions of silver, lead, and zinc, but decreases in gold and copper. The increase in total value was \$496,799, due principally to mines in the Coeur d'Alene region of Shoshone County.

GOLD DECREASES

The production of gold decreased from \$1,344,559 in 1913 to \$1,152,315 in 1914, or a decrease of \$192,244. Gold from placers was valued at \$700,454, and that from deep mines at \$451,861. Of the placer gold, \$568,989 came from dredge operations. Boise County led in gold output valued at \$601,227, and Lemhi County followed with a production of \$305,991 in gold. These are the counties in which most of the dredging is done. Gold produced from mill bullion by amalgamation and cyanide was 12,284.03 ounces; from concentrates, 3,168.48 ounces; and from crude ore smelted 6,406.28 ounces. Siliceous ores supplied 17,582.59 ounces of gold; copper ores, 1,076.56 ounces; lead ores, 2,467.11 ounces; and lead-zinc ores, 725.78 ounces.

RECORD FOR SILVER

A record production of silver increased the figures from 9,989,193 ounces, valued at \$6,033,473 in 1913, to 12,479,516 ounces, valued at \$6,901,172 in 1914. This increase of 24.93 per cent. was creditable almost entirely to the Coeur d'Alene region. Concentrates supplied 8,845,309 ounces of silver; crude ore, 3,612,369 ounces; and bullion, only 14,767 ounces. Most of the silver, or 8,697,580 ounces, came from lead ores, 3,491,469 ounces from lead-zinc ores, 239,355 ounces from copper ores, and 39,002 ounces from siliceous ores. Shoshone County produced 97.59 per cent. of the total, or 12,178,194 ounces. The Hunter district at Mullan supplied 1,057,347 ounces; the Leland district at Burke and Mace, 5,565,372 ounces; and the Yreka district at Wardner, 4,887,926 ounces.

COPPER OUTPUT DECREASES

The copper output decreased from 9,592,966 pounds, valued at \$1,486,910 in 1913, to 6,445,187 pounds, valued at \$857,210 in 1914. Of the total, Shoshone County produced 4,242,662 pounds and Custer County 2,110,909 pounds. Copper ores were the source of 4,986,206 pounds and small percentages came from lead ores and lead-zinc ores. Concentrates contained 3,242,294 pounds, and crude ore 3,202,893 pounds.

Records were again broken in the production of lead, which increased from 317,871,945 pounds, valued at \$13,986,366 in 1913, to 348,526,069 pounds, valued at \$13,592,517 in 1914, an increase of 30,654,124 pounds. Mines in Shoshone County produced 97.47 per cent. of the lead; Fremont County, 1.25 per cent.; and Lemhi, less than 1 per cent. Crude ore smelted supplied 82,816,132 pounds and concentrates 265,709,937 pounds. Most of the lead, or 261,689,295 pounds, came from lead ore, and 86,822,925 pounds came from lead-zinc ore. Hunter district was credited with 35,798,211 pounds; Leland district with 121,603,290 pounds; and Yreka district with 162,471,235 pounds.

ZINC OUTPUT SOARS

A greatly increased production of zinc ore and concentrate brought the spelter output from 23,173,953 pounds, valued at \$1,297,741 in 1913, to 42,012,435 pounds, valued at \$2,142,634 in 1914. Nearly all the zinc came from Shoshone County, 35,453,268 pounds coming from lead-zinc ore and 6,559,167 pounds from zinc ore. Concentration and flotation machines made a product supplying 34,926,439 pounds and crude ore supplied 7,085,996 pounds.

MORE MINES WORKED

There were 386 producing mines in Idaho in 1914, against 384 in 1913. Of these, 176 were deep mines and 210 were placers. Ore sold or treated in 1914 was 2,235,349 tons, against 2,451,592 tons in 1913. Of the total, 2,066,361 tons were concentrated, making 303,046 tons of concentrates. Gold and silver mills treated only 34,861 tons, and 130,512 tons were crude ore smelted. Most of the material was smelted outside the state, as but one smelter was operated at Clayton, in Custer County.

Suspend Red Wing Rate

Proposed inquiries on rates on bituminous coal from Chicago to Redwing, Minn., and certain other points, have been suspended until February 29, 1916. A previous order suspended these rates from May 1 to August 29.

Gypsum Figures Break Record

The production of gypsum in 1914 was marked by an increase in value due to a considerable advance in the price of calcined gypsum, the total value breaking all records, according to a Geological Survey bulletin.

CHEMICAL SHOW CAUSES ADDED INTEREST IN MINERALS

Raw Material from American Mines to be Used More Extensively in Future— Exhibits Were Extensive

Attention was called in a striking manner to the opportunities offered for increased exploitation of raw materials from American mines at the First National Exposition of Chemical Industries held in New York September 20-25. Expositions of this branch in other countries have been of the greatest value in developing a solidarity of interests among chemical manufacturers in bringing them more closely in touch with producers of raw materials, with novel devices and perfected methods, with designers of improved mechanical accessories, and finally with the consumers of finished products. Such occasions have been stimulating, suggestive, and inspiring, showing where national resources have been neglected, where the needs of domestic consumption have been overlooked, or only inadequately met, and, on the other hand, where difficulties and obstacles, physical, technical, or commercial, have been vanquished by the intelligent application of scientific fact and theory, or by the happy combination of pluck, daring, and skillful adaptation, according to Thomas H. Norton, of the Department of Commerce.

This first gathering of our country's technical chemists for a comprehensive presentation of their achievements in meeting the nation's demands for an enormous variety of products that fall technically into the category of chemicals unquestionably was highly educative. It shows marvelous accomplishment in certain fields; in others it reveals a lack of enterprise in utilizing effectively and fully the magnificent treasures of our mines, forests, fields, and streams.

The visitor at the exposition noted how admirably the wonderful sulphur deposits of Louisiana are exploited and utilized, the extent and perfection of our manufacture of acids, especially of contact sulphuric acid, and the completeness of our petroleum industry. At the same time he saw how we have almost totally neglected the vast stores of potash stored annually in the kelp crop of our Pacific littoral, and send \$10,000,000 abroad to purchase products of the Stassfurt mines.

He saw likewise that we waste coal-distillation by-products valued at \$100,000,000 while we remit \$10,000,000 annually to Germany for the purchase of the varied tints demanded by our textile and allied branches.

He learned that mountains of sawdust accumulate about the sawmills of the Northwest, while we import annually from Germany over \$400,000 worth of oxalic acid, which could so easily be manufactured from the waste sawdust.

GOVERNMENTAL ASSISTANCE

The national Government early recognized the importance of furthering in every possible

way the evolution of a chemical industry. This has found concrete expression in a number of bureau organizations. The chief instrumentalities in this connection are the Bureau of Mines and the United States Geological Survey, in the Department of the Interior, the Bureau of Animal Industry, the Bureau of Plant Industry, the Forest Service, the Bureau of Chemistry, and the Bureau of Soils, of the Department of Agriculture; and the Bureau of Standards, Bureau of the Census, and Bureau of Foreign and Domestic Commerce, of the Department of Commerce. Of the bureaus in the Department of Commerce, the Bureau of Standards has for its main purpose the standardization of the mechanical accessories, the processes, and the products of these industries; the Bureau of Foreign and Domestic Commerce brings the producer of raw materials into touch with the manufacturer, and the latter into relations with the consumer, through its studies of markets and trade opportunities at home and abroad; and the Bureau of the Census is the national bookkeeper of the industries.

EXHIBITS BY GOVERNMENT BUREAUS

Early in the past summer it seemed eminently desirable that the many-sided activities of our national Government in furthering the development of the various chemical industries should be comprehensively displayed by a collective exhibit of the above-mentioned bureaus in the first national exposition of this branch. A meeting was held in the office of the Chief of the Bureau of Foreign and Domestic Commerce, at which fourteen delegates from the bureaus mentioned above were present. The manager of the exposition was in attendance and outlined at length the objects and features of the undertaking.

As a result of this gathering, steps were taken by the different bureaus to participate in a collective exhibit which should clearly reveal the many ways in which departmental agencies are aiding the technical chemist, seeking raw material, perfecting methods and mechanical appliances, testing his products, and seeking markets for them in every quarter of the globe.

The Geological Survey prepared an elaborate exhibit of charts, transparencies, and mineral specimens, displaying in manifold variety the natural resources of the land available as raw material for the manufacturing chemist. This emphasizes the extent and variety of our mineral resources, as yet scarcely utilized by domestic chemical works, or sent abroad to return to us in the form of purified and valuable compounds, essential to a variety of industries.

The exhibit of the Bureau of Mines included an imposing display of the means employed to insure the safety of the miner. The general public gathered in throngs to witness the complete exposé of the fascinating process, devised by Dr. Rittman, of the Department of the Interior, for transforming almost worthless petroleum residues at will into volatile

gasoline for motor engines, or into benzol and toluol, now employed on so vast a scale for the manufacture of high explosives. Other exhibits illustrate the work of the bureau in producing the raw metal radium from American carnotite, at a cost far below that required by current methods of preparation in Austria and France, in studying the technology of petroleum, and in investigating the clays of the South.

The exhibit of the Forest Service displayed the remarkable results obtained from its laboratory at Madison, Wis., in producing a pure, brilliant, yellow dyestuff from the Osage orange, growing in such profusion throughout the valley of the Mississippi, notably in Texas and Oklahoma. This forms a valued addition, at this period of dyestuff scarcity, to the coloring materials available for tinctorial purposes. Of great interest are also the exhibits of the most effective methods for turning various American woods, besides spruce, into pulp for paper manufacture and for preparing silk and cellulose products from woods.

The Bureau of Chemistry exhibited the novel and fascinating process recently devised for concentrating and separating fruit juices by partial freezing of the liquids in which they are present; much material illustrative of paper making; the development of standards and inspection of naval store supplies; the utilization of various waste products; tanning materials; demonstration of the wearing quality of sole leather; recovery of tanning waste; denaturing and utilization of egg products in tanning operations.

The elaborate exhibit by the Bureau of Soils of everything connected with the extraction of potash salts from the kelp of the Pacific coast attracted the attention of great numbers, on account of the keen interest now felt throughout the entire country in a satisfactory solution of the problems connected with assuring a domestic supply of this most important class of salts.

The exhibit of the Bureau of the Census comprised a complete set of the publications and bulletins portraying, at quinquennial periods, the status and condition of the various chemical industries.

The exhibit of the Bureau of Standards was the most complete and extensive of any of the departmental agencies. It illustrated in detail the varied activities of the Bureau of standardizing methods and accessories in the manufacture of iron and steel, nonferrous metals, cement and concrete, lime and plaster, ceramics and glass, bituminous materials, paint and varnish, mineral oils, gas, textiles, paper, ink, rubber, sugar, refrigeration, electrochemical industries, and laboratories in general. Many types of apparatus also were shown, such as thermometers, pyrometers, volumetric apparatus, calorimeters, saccharimeters, gas and water meters, etc. Samples of various materials and illustrative methods of testing or purification formed prominent features.

The exhibit of the Bureau of Foreign and

Domestic Commerce showed the chemical trade the highly perfected methods for collecting, filling and communicating trade information. An official of the New York branch office was in constant attendance, explaining to all visitors the many facilities offered by the mechanism of the Bureau for bringing to the attention of chemical manufacturers the opportunities for extending their trade to all quarters of the world, and for securing such information from foreign lands as may be helpful in improving and expanding their respective branches. There was a complete exhibit of the many publications of the Bureau, which record the statistics of our domestic and foreign trade or present in full detail the data desired by all branches of industry and commerce on foreign markets and condition.

VALUE OF BUREAU PUBLICATIONS

The Bureau of Foreign and Domestic Commerce has devoted special attention to monographs upon chemical subjects. Among these are reports on "The Utilization of Atmospheric Nitrogen," "The Chemical Industries of Belgium, Holland, Norway and Sweden," "Cotton-seed Products," "Dyestuffs for American Textile and other Industries," "Foreign Trade in Denatured Alcohol," "Foreign Trade in Paints and Varnishes," "Foreign Salt Market and Industry," "South American Market for Soap," "Some Aspects of the Iron and Steel Industry in Europe," "The Sugar Industry," "The Pottery Industry," etc.

Much attention has been devoted by the Bureau to the acute conditions now prevailing in the dyestuff industry and to the means of mitigating its hardships, as well as of freeing our textile and other interests from the nearly complete dependence upon dyeing materials of foreign origin. In this connection there was a full display of samples of the new colors recently invented in the United States, and first brought to the attention of dyestuff consumers by the Bureau. There was an extensive collection of samples of various chemical products, illustrative of the investigations organized by the Bureau and now under way to ascertain clearly and definitely to what extent the United States is dependent upon foreign countries for its supply of chemicals, to what degree American raw material is available for the domestic manufacture of such chemicals, and whether the time is not opportune to seek aggressively foreign markets for products of our domestic chemical works. The Bureau is responding to a public sentiment that the time is ripe for the evolution of a complete, comprehensive, genuinely American chemical industry.

Arizona Altitudes Measured

Altitudes have been measured at a number of places in Arizona recently by the Geological Survey. The highest altitude in that State is San Francisco Peak, in Coconino County, which is 12,611 feet above the sea-level.

WEST'S MINERAL OUTPUT WILL BE INCREASED BY MANY MILLIONS, MANNING THINKS

Work Being Conducted or to be Begun by the United States Bureau of Mines
Together with Results from Mining Experiment Stations Expected
to Do Much to Stimulate Mining Industry

Before a representative gathering at the eighteenth annual convention of the American Mining Congress, Van H. Manning, Director of the United States Bureau of Mines, delivered the following address:

Before going into a general discussion of what the Bureau of Mines of the Department of the Interior has done, is doing, and hopes to do for the metalliferous industries, I shall call attention to the purpose of the Bureau of Mines, as conceived by the late director of the Bureau, Dr. Joseph A. Holmes, and as embodied in the organic act outlining the Bureau's duties. This purpose, which has the full sanction of the present Secretary of the Interior, is to conduct in behalf of the public welfare such fundamental inquiries and investigations as will lead to increased safety, efficiency, and economy in the mining and metallurgical industries of the United States. Such investigations must of necessity be general in scope and national in character.

STANDS FOR ALL ALIKE

The basic principle of the work of the Bureau is that the investigations it conducts and the recommendations it makes are not for the benefit of private enterprises or properties. The Bureau stands for all alike, and its investigations concern the mining industry as a whole.

It is no wonder that you men from the West, especially those of you interested in the mining and treatment of ores and metals, ask what you may expect from the Bureau and what it hopes to do for the industries you represent. For this reason you may wish to know something of the history of the Bureau and the causes that led up to its establishment.

The work of the Bureau of Mines was initiated in 1904 under the United States Geological Survey. The reorganization of this work under the Bureau of Mines became effective July 1, 1910. Under the Geological Survey, fuels and structural materials were tested, and investigations of the causes and the prevention of coal-mine explosions were begun. The creation of the Bureau was due to a general desire for the extension of the work into metal mining and other new fields.

CHIEF ATTENTION GIVEN TO COAL

During the past five years—the life of the Bureau—its chief work under the wording of appropriations made by Congress has been

centered on efforts to bring about greater safety in coal mines, by testing and approving better types of explosives, miners' lamps, and electrical and other equipment, and by recommending safer methods. The first appropriation for inquiries and investigations into the mining and treatment of ores and other mineral substances, with special reference to safety and waste, was not made until 1912. Prior to this appropriation the Bureau was able from other appropriations, although these were inadequate even for urgently needed investigations relating to coal mining, to conduct preliminary inquiries of a few metal-mining problems because of the bearing of these problems on the coal-mining investigations. However, as yet the Bureau's work has been confined largely to investigations of coal-mine accidents and the study of preventive measures that, if adopted, will save the lives of thousands of miners.

The more important work that the Bureau has done in relation to the metal-mining industry is briefly summarized here:

BENEFITS FROM METAL-MINING INVESTIGATIONS

The Bureau has studied the smelter-smoke problem with the purpose of aiding the development of methods whereby damage to vegetation from smelter fumes may be greatly lessened, if not prevented, and smelters that are now closed by litigation over such damages may be enabled to operate and to take ores from mines now idle through lack of a market.

Investigations of the effects of silicious rock dust in mine air have shown, in one important lead and zinc mining district, an excessive prevalence of tuberculosis from breathing air containing such dust, and have resulted in remedial measures being undertaken by mining companies and State officials.

A method of concentrating the carnotite ores of Utah and Colorado has been devised by which thousands of tons of material that under former methods would have been allowed to go to waste has become a source of profit to the miner.

A process has been perfected by which radium, needed for the treatment of cancer and other malignant disease by Government hospitals, can be recovered from these carnotite ores at a cost that is one-third of the price formerly asked by foreign producers.

Investigations of explosives for use in metal mines have shown the need of explosives giving off minimum amounts of noxious

fumes, and have led to the manufacture of improved types of explosives.

The Bureau has published as a basis for the increase of safety in metal mining an annual statement of accidents in metal mines in which, for the first time, accidents in all metal-mining States have been grouped by causes, so they can be directly compared.

CANDLES ARE GOING

Investigations of mine lamps have shown the advantages of acetylene and electric lamps for metal miners, and are resulting in such lights replacing candles and torches, which have caused many fires in mines.

Extension of mine rescue and safety training into metal-mining districts has resulted in hundreds of metal miners being trained in first-aid and mine-rescue methods, and has stimulated the formation of mine-rescue corps and the purchase of first aid and rescue equipment by mining companies.

Studies of tungsten and molybdenum ores by the Bureau are developing improved processes of concentration, which, it is believed, will make possible the profitable exploitation of many small mines now idle.

Studies of methods of concentrating lead and zinc ores have shown mine owners where losses occur, and how a greater percentage of the metal in the ores can be reclaimed.

STUDIES IN IRON

Titaniferous iron ores have been investigated in order to determine the practicability of separating the iron and titanium minerals by electric concentrators, and also the possibility of smelting such ores directly in blast furnaces, the purpose of these investigations being to help make available as sources of iron large deposits of titaniferous ores now unworked.

An investigation of methods of treating low-grade complex ores such as are found in many districts throughout the Rocky Mountain States is showing what methods may be commercially used for recovering metals in these ores and thereby make available millions of tons of ore now unworked.

A study of the causes of mine fires has shown how many metal mine fires have started and the Bureau has pointed out the precautions to be taken against such fires and the best methods of fighting them.

Studies of ventilation in metal mines, though of a preliminary character, have shown the need of better methods of ventilation in some mines.

An investigation of placer-mining methods, now in progress, has already shown how some of the losses of precious metals at gold dredges can be obviated or prevented.

The Bureau has given much attention to the development of laws to increase safety in mining, and has just published comprehensive rules for metal mines, which are intended as a guide for State officials and officials of mining companies in framing better laws and regulations.

WASTE IS LESSENED

Through various investigations new processes and methods are being devised for saving and utilizing with profit metals and mineral substances that under past methods have been wasted.

The Bureau's fuel-testing investigations are showing how greater economies can be effected in generating power for mines and mills, and how low-grade fuels can be used advantageously in regions where high-grade fuels are costly.

In presenting this summary of accomplishments, I wish you to understand that I do not claim that they represent the work of the Bureau alone. The active cooperation of other Government bureaus, of State inspection departments and of many individuals is gratefully acknowledged.

SAFETY WORK

I do not feel that I am claiming too great credit for Dr. Holmes when I say that he chiefly was responsible for the nation-wide progress of the "safety-first" movement, which has now reached every industry in the country. His belief that safety implies efficiency and that true efficiency insures safety is shown by the motto that he adopted for the Bureau of Mines—"Safety and Efficiency" in the mining industries. His keen realization that the Bureau by itself could do little to insure improvement is shown by the following extract from his last annual report:

"In conducting its campaign for the increase of safety and efficiency in the mining industries there has been adopted the following general plan of cooperation between the National Government and other larger agencies. (1) That the National Government conduct the necessary general inquiries and investigations in relation to mining industries, and disseminate in such manner as may prove most effective the information obtained and the conclusions reached; (2) that each State enact needed legislation and make ample provision for the proper inspection of mining operations within its borders; (3) that the mine owners introduce improvements with a view to increasing safety and reducing waste of resources as rapidly as the practicability of such improvements is demonstrated; and (4) that the miners and mine managers cooperate both in making and in enforcing safety rules and regulations as rapidly as these are shown to be practicable. The States, the miners and mine owners, and other agencies, such as the mining and engineering societies, are now showing a commendable willingness to cooperate with the National Government in this work."

I sincerely hope that the spirit of cooperation which Dr. Holmes aroused will continue to spread and grow stronger and that the Bureau may work in full sympathy with the desires of the mining industries of the country.

MINING EXPERIMENT STATIONS

The need of mining experiment stations through which the Federal Government could extend to mining some measure of the liberal aid it has long given that other basic industry, agriculture, by the establishment of fifty-two agricultural experiment stations and the expenditure of hundreds of millions of dollars, was strongly presented to Congress by the Secretary of the Interior, and as a result of the sympathetic interest of Secretary Lane in the efforts made by Dr. Holmes for the betterment of mining an act providing for the establishment and maintenance of ten mining-experiment stations and seven mine-safety stations in addition to those already established was passed at the last session of Congress. The enactment of this legislation, the last in which he was actively interested, stands pre-eminently as a monument to the creative force and energy of Dr. Holmes.

The conduct of experimental work for the whole metal-mining industry from one central station in one of the metal-mining States was seen to be impracticable because of the vast area over which the ores are scattered, the varied nature of the ores and the conditions under which they must be developed. Therefore, when the plan of establishing several stations was conceived it was decided that the greater number of these stations should be located in the Western States. It is expected that each State in which a station is located will cooperate in the study of mining problems by supplementing the appropriations to be made by Congress, the States' efforts being directed to such investigations as are distinctly local in character, while the Federal Government investigates those problems that are more general and national in character and importance. Under the terms of the act three of those mining-experiment stations are to be established each year under the appropriation made therefor.

PRODUCTION OF RADIUM

Some of the more notable achievements of the Bureau of Mines I have already mentioned. One of these is the production of radium on a commercial scale from Colorado ores by a process that is much cheaper than other processes and is cheaper even than was predicted by the Bureau. By this process 1 gram of radium can be produced by the Bureau at a cost of \$36,500, this figure including cost of ore, insurance, repairs, amortization allowance for plant and equipment and all other incidental expenses. I hope that you will not think that I have any desire to boast of what the Bureau has done, but when you remember that radium has been selling for \$120,000 to \$160,000 per gram, this accomplishment of the Bureau will, I trust, seem worth while.

The first important result of the Bureau's radium investigations was to increase the price the miner received from the foreign

buyers of the ore. When the radium investigations began in 1912 carnotite ore carrying 2 per cent uranium oxide was selling at approximately \$75 per ton f.o.b. New York, a figure that certainly did not pay the cost of mining and shipment. During 1913 and the early part of 1914, through information the Bureau published in regard to the export of American ores and the value of these ores, the price increased and had fully doubled by the time the European war began.

The ores from which this rare metal is extracted are few and the deposits are not inexhaustible. For this reason it is highly desirable that the Government take action that will prevent so much of this ore as now remains in its possession from being wasted or monopolized. The only fields of carnotite ore known today are in Colorado and Utah, and those fields cannot supply ore for many years of such mining as prevailed at the beginning of the European war. Meanwhile, the demand for radium is bound to increase rapidly as the value of the radium emanation in the treatment of disease is demonstrated. By its use some of our eminent surgeons have obtained remarkable cures of cancer.

Having thus briefly called attention to some of the things the Bureau has done, I will ask you to consider a few of the things the Bureau can do and is endeavoring to do for the advancement of metal mining in the Western States.

METAL-MINING PROBLEMS

Improvements in mining and transportation have brought great changes to the metal-mining industry. Low-grade ores that were formerly left in the ground as worthless are now being mined, and waste dumps and piles of tailings are being treated at a profit. The great problems that confront the mining industry of the West today are the development of cheaper methods of mining and milling low-grade ores, and the devising of metallurgical processes that will extract the relatively small metal content at a profit. To reduce the cost of handling and treating ores, the application of the best existing methods and the development of new methods are required. Only the larger companies can afford to carry on necessary investigations for themselves. Experiment is beyond the reach of a small company with limited capital. Furthermore, there is need for a national agency for gathering and distributing information of value to everyone engaged in the industry, and for making such recommendations as will best assure adoption of safer and more efficient methods. It is in work of this kind, work that deals with general and fundamental problems, whose solution is necessary to the upbuilding of an industry that Government activity can prove itself of most value.

The United States Geological Survey has done much to increase our knowledge of the character, geologic relations and areal extent of the mineral resources of the West, and several States have ably assisted its work.

The work of the Federal Bureau of Mines begins where the work of the Survey ends. Investigations to determine how mining methods can be made safer and more efficient, how milling and metallurgical methods can be improved so as to assure a larger extraction of metal, reduce waste, and avoid damage to other interests, and how ores or mineral substances now unused can be made a source of wealth—these are all within the scope of its duties as defined by Congress. Much of the work that the Bureau is doing in the West is in only the initial stage. At present activities are largely centered at three points.

INVESTIGATION AT SAN FRANCISCO

At San Francisco the smelter-fume investigation is in progress. Here the chemical changes involved in the roasting and smelting of sulphide ores, the formation of compounds that make smelter smoke injurious to vegetation, and the methods by which this damage can be lessened or prevented have been and are being carefully studied in the laboratory and investigated at smelting plants in co-operation with other agencies attacking the same problems.

The work of the Selby Smelter Commission, of which Dr. Holmes was chairman, deserves notice. This commission, composed of disinterested experts, investigated the question of damage from the Selby smelter, a question that had given rise to protracted and costly litigation, and embodied its findings in an exhaustive report that is being published by the Bureau of Mines. The methods used by the commission have been adopted in other investigations of smoke damage.

The importance of the smelter investigations lies not only in the possibility of their showing how substances now wasted in smelter smoke and fume can be recovered and utilized with profit, but also in the probability of their demonstrating how smelters that have been closed by litigation over smoke damage may be operated without doing injury, and thus become buyers of ore from local mines that are now unworked because of the lack of markets.

Recently at San Francisco the Bureau has begun a preliminary investigation of the hydrometallurgy of gold and silver ores, in the effort to develop uniform tests and to make improvements in various details of the cyanide process, with a view to increasing its efficiency. At present the work is confined to the cyanidation of silver ores from Nevada, and is receiving active cooperation from the Nevada Mine Owners' Association.

Another investigation being conducted through the San Francisco office relates to placer mining, including the operation of gold dredges and the working of hydraulic mines. This investigation consists largely of field studies though it is hoped that various special problems will later be studied by laboratory methods.

INVESTIGATIONS AT DENVER

To the importance of the radium investigations being carried on at Denver I have already called your notice. Other work being done at Denver includes studies of the minor metals, such as tungsten (used in the filaments of electric lights and in special steels) and molybdenum (needed in the manufacture of alloy steels) and others, many deposits of which are scattered through the mining districts of the West, but are unworked because of the difficulty of mining and concentrating the ores profitably with existing methods. Already these investigations have shown that by improved concentrating methods devised by the Bureau's engineers, deposits of molybdenum ore now lying idle can be worked profitably.

AT SALT LAKE CITY

At its Salt Lake City station the Bureau is conducting, in cooperation with the University of Utah, investigations to ascertain the extent of the low-grade and complex ores carrying gold and silver with copper and lead or zinc that are now unworked but will become of value with the development of a practical process for recovering the metals. In these investigations the extent of the low-grade and complex ores in the State of Utah has been determined, and it is planned to make similar examinations in Idaho and other adjoining States. Meanwhile, various methods of concentrating and treating these ores are being tested in the laboratory and are being studied at mills, in the attempt to devise more efficient and economical methods than those now in use. Vast quantities of these low-grade ores await treatment in the older mining districts of Utah and adjacent States, and the development of efficient methods of treatment will increase the value of the mineral output of these States by millions of dollars.

In addition to the work for the advancement of metal mining that the Bureau is doing through these stations, such of its mine-rescue cars as could be spared from urgently needed work in the coal fields of the country have made a beginning in training metal miners in first aid and rescue methods. The mining engineers in charge of these cars have been investigating those phases of lighting, ventilation, and the use of explosives that are peculiar to metal mines, and have prepared reports embodying recommendations for the prevention of accidents and the use of safer devices and methods.

It is hoped that at the next session of Congress provision will be made for the purchase and equipment of the three new mine-rescue cars authorized, thereby enabling a much needed extension of rescue—and first aid training in the metal-mining States.

WHAT BUREAU MAY DO

The metal mining investigations and inquiries that might be profitably followed by

the Bureau of Mines are so many and various that I will not attempt to mention them all. As a suggestion of what the Bureau may be able to aid in accomplishing, I offer the following summary of some mining and metallurgical problems, and a brief statement showing how large are the imports of some metals and minerals that are found in this country but are not produced here or are produced only in small quantities.

In the mining and metallurgy of the precious metals there remains the possibility of recovering a larger amount of platinum and other metals of the platinum group from gold placers, and also the possibility of devising processes for extracting gold and silver profitably from low-grade complex ores. Many gold and silver ores contain a considerable percentage of zinc, but until recently, little or no attempt was made to recover this metal. Losses in the mining, milling, and metallurgy of zinc ore are startling. At many districts in the West, owing to high freight rates and high smelter charges, much low-grade zincky ore is left in the mine. In concentrating zinc ores the total metal losses may amount to 30 to 35 per cent. In the treatment of such complex zinc-bearing ores by present methods some of the contained silver, lead or copper is often wasted. On the other hand, if the ore is treated for its copper content, for instance, not only is the zinc wasted but a penalty is charged, depending on the amount of zinc present, that is often as high as \$5 or \$6 a ton. The total loss in the metallurgy of zinc ores, from the ore in the ground to the commercial smelter, is rarely less than 40 per cent.

AS REGARDS COPPER

As regards copper ores, large deposits still remain unworked, and the percentage of metal recovered in many mines is lower than it should be. The total waste from ore to refined copper in many instances is 30 to 40 per cent of the metal in the ore.

In 1913 about 87 per cent of the copper produced in this country came from the Western States. As this represented a recovery of about 70 per cent of the copper in the ore, the annual loss of copper that year in those States alone was fully \$70,000,000 or \$200,000 a day.

At present the treatment of many copper ores is on the verge of a revolution, as shown by enormous plants just erected in Montana and Chile, through the use of wet methods—leaching and precipitation—in place of dry concentration by smelting.

As regards the total production of other metals, in 1913 the production of tin, antimony, platinum, chromic iron ore, and manganese ore in the United States amounted to only \$130,000, whereas the value of these same minerals imported into the United States in that year was nearly \$56,000,000. The most important item in this list was tin, the output of which in the United States was valued at less than \$37,000, whereas the imports were valued at nearly \$47,000,000. There are un-

developed tin deposits in California, Idaho, Washington, Wyoming, and Alaska, and some partly developed deposits in Texas and South Dakota. At present Alaska produces practically all the tin that is mined in the United States.

The United States produces no antimony but imports about \$1,000,000 worth. Deposits of antimony ore are known in eight or ten of the Western States.

Less than \$50,000 worth of platinum is produced in the United States each year, whereas imports are 100 times as large. Platinum is found in nearly every Western State, and is recoverable from many gold placers and beds of black sand.

The production of manganese ore in the United States is valued at about \$40,000, whereas the imports are fifty times as large. Deposits of manganiferous ores are found in at least eight of the Western States.

Large deposits of high-grade iron ores are found in the Pacific coast States, where as yet there is practically no production of pig iron, owing to the scarcity of good coking coal, and iron and steel are imported or procured through the payment of high freight charges from furnaces farther east.

It is my belief that through investigations now under way, and through investigations to be carried on at the new mining experiment stations authorized by Congress, efficiency in mining will be stimulated, new processes of treating ores will be developed, new uses for substances now wasted will be found, and the metal production of the Western States will be increased in value by millions of dollars annually. Also, conditions affecting the safety and health of miners and of workers in mills and smelting plants will be so greatly improved that the present high death rate from accidents will be reduced until American methods in mining and metallurgy will be regarded as no less notable for safety and efficiency than they are now for boldness, large outputs and low costs.

But the Bureau cannot accomplish these ends by itself. It must have the cooperation of State officials, of mining and metallurgical companies, and of the workers in mines, mills and smelters. Acting as an investigator, a guide, having no power to enforce its recommendations, it seeks your aid and will welcome suggestions or advice in regard to the problems it should investigate and the methods it should follow. The Bureau has no desire to be dictatorial or arbitrary in its attitude—it endeavors to accomplish its purpose with the least disturbance of existing conditions. As director of the Bureau I shall steadfastly endeavor to carry forward its work for the betterment of the mineral industries along the lines laid down by Dr. Holmes and I shall constantly strive to make the Bureau the great agency for the increase of safety and efficiency that Dr. Holmes wished it to be.

But the Bureau is only one among those in the Interior Department that are working for the public good, and, in conclusion, it gives

me great pleasure to assure you that in my efforts as director I shall have the continued sympathy and encouragement of that keen-sighted and broad-minded citizen of California who, as Secretary of the Interior, is doing so much to call attention to the natural resources of the West and the nation's interest in their efficient utilization.

TWO-THIRDS OF WITHDRAWN COAL LANDS UNCLASSIFIED

Two-thirds of the public coal lands in the United States remain to be classified.

The total land classified to date amounts to 19,243,742 acres. This includes all lands classified since the work was begun by the Survey.

If these lands had been sold at the lowest price possible under the law, as was done in practically every case formerly, the lands would have netted to the Government \$319,000,000; their sale under present procedure will bring \$787,000,000. As is evident, this leaves a difference of \$468,000,000 between the revenue which may accrue to the Federal Government under the present system and what would have accrued under the former system.

The average difference in value of coal lands is approximately \$25 per acre.

It probably will be twenty years before all the coal lands withdrawn can be classified and valued.

LANE TO URGE LEASING AND WATER-POWER BILLS

Secretary of the Interior Lane in his annual report, now in preparation, will again urge Congress to pass the general leasing and water-power bills which went through the House last session but failed in the Senate.

These bills provide for the leasing by the Government of coal, oil and phosphate lands in such manner as will permit the development of mineral properties on Government lands and yet retain for the nation title in such lands. Another measure to be urged by Secretary Lane is the water-power bill designed to permit the leasing of water-power rights on navigable streams.

D. W. BRUNTON THINKS MINING CONGRESS JOURNAL GREAT SUCCESS

In commenting upon the JOURNAL, D. W. Brunton, a director of the American Mining Congress, says in a recent communication: "You are certainly making a great success of the MINING CONGRESS JOURNAL. It gives you a great audience each month."

MANNING TO BE GUEST OF HONOR AT BANQUET HERE

A banquet at which Van H. Manning, the new director of the Bureau of Mines, is to be the guest of honor, is being arranged by the

members of the staff of the Bureau of Mines and Geological Survey.

Plans have not been completed, but it is the intention to give this affair late in October.

CARL SCHOLZ MADE MEMBER OF AMERICAN INSTITUTE COMMITTEE

Carl Scholz, president of the American Mining Congress, has been designated a member of the committee advisory to the Bureau of Mines on mine explosions of the American Institute of Mining Engineers. The appointment was made by William L. Saunders, president of the American Institute of Mining Engineers.

OHIO COUNTY, KY., OIL FIELD TO BE SUBJECT OF REPORT

A preliminary report on the Ohio County, Ky., oil fields is in process of preparation. While this field is small and is removed from other oil districts, there are many interesting features in its development.

E. W. Shaw, of the Geological Survey, recently spent some time studying formations in this field which will be made the basis of the report.

IRON ORE SHIPMENTS INCREASE AS GENERAL BUSINESS PICKS UP

Information reaching Washington attributes the increase in shipments of iron ore from the Lakes district to the general revival of business and not to conditions brought about by the war. The heavy increases being shown over last year are in part due to the abnormally poor business in 1914.

IMPORTANT FIELD WORK IN BIG HORN BASIN FINISHED

Important field work just has been completed by Max W. Ball, of the Geological Survey, on the eastern edge of the Big Horn Basin oil region in Wyoming.

Mr. Ball is chairman of the oil classification section of the Land Classification Board. He has been working on the Big Horn Basin for the past two months.

GULF STORM DOES NO DAMAGE TO TEXAS SULPHUR MINES

Reports from Freeport, Tex., state that no harm was done to the sulphur mines at that point by the Gulf storm which did such damage at Galveston.

To Issue Metallurgical Report

A statistical report on metallurgical work will be issued early this month by the Bureau of Mines.

REMARKABLE DEVELOPMENT OF SULPHUR IN PROGRESS ON TEXAS COAST

**Freeport Company Is Shipping an Important Part of Production from its Mines at
Mouth of Brazos River—Splendid Mechanical
Equipment Makes Task Easier**

Much attention is being attracted by the remarkable development of a sulphur deposit near Freeport, Tex.

This new sulphur field is beginning to ship an important production of sulphur and is destined to make itself felt in the sulphur trade of the world, according to information reaching Washington.

The dominance of the world's sulphur market by the Union Sulphur Co. of Louisiana is threatened as a result of this development.

The Freeport company enjoys an advantage of possessing mines located on the seaboard. Incidentally this is unique in mining experiences.

W. C. Phalen, the geologist assigned to sulphur work by the U. S. Geological Survey, has written interestingly on Texas sulphur. In a recent report he says, in part:

"Since the publication of notes on the sulphur industry in Texas in 1913 the development of the sulphur field at Bryan Heights, near Freeport, at the mouth of Brazos River, Brazoria County, Texas, has been very active, and the operations of the Freeport Sulphur Co. have been materially perfected and extended.

"The sulphur occurs in pockets and cavities and as streaks impregnating gypsum or a formation in which gypsum predominates. Cores from the deep drillings show varying percentages of sulphur. The sulphur is produced directly from the bed containing it, which is approximately 1,000 feet below the

surface. The treatment consists simply in melting the sulphur in place, thus rendering it possible to raise it to the surface by means of an air lift. Superheated water at a temperature of 336° F. and under high pressure is forced into the sulphur-bearing formation. The water penetrates the deposit and melts the sulphur (whose melting point is 239° F.), which then flows to a pipe whence it issues at the surface and flows into bins. These bins are constructed of boards, which are raised as the mass increases, the final height of the bin being from 30 to 35 feet. The sulphur promptly congeals on exposure. As it issues from the pipe the molten sulphur has a peculiar and characteristic appearance, but, as the temperature decreases, it passes through variations of color until after a few hours it assumes the true sulphur yellow.

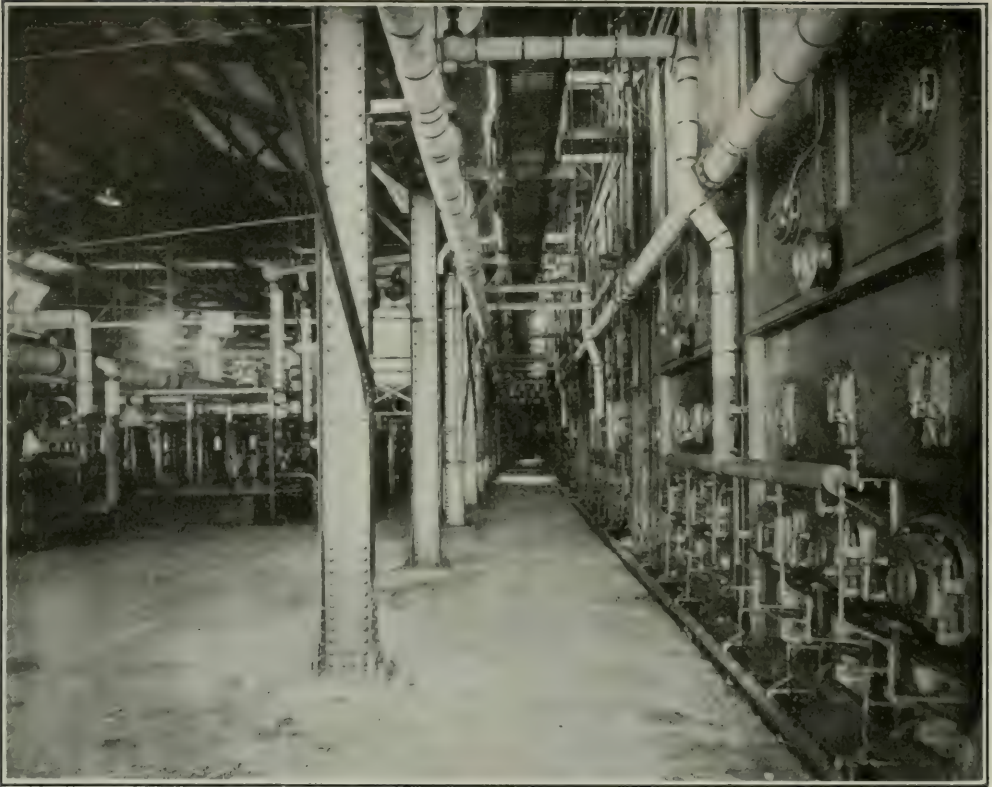
NEW PLANT

"The new plant is fireproof; it has concrete floors, water conduits, and a steel superstructure. As the entire energy of the plants is devoted to making steam for the purpose of heating water, the boiler capacity is necessarily large.

"The steam produced in the boilers is used chiefly in four mine water heaters of special design and construction. Each of these heaters is capable of heating 1,000 gallons of water a minute from 60° F. to 336° F. under a pressure of 100 pounds.



LOADING FROM CARS FOR SHIPMENT BY WATER



POWER PLANT

Picture shows boiler and pump sections only.

"Among other important additions to the plant made since the writing of the report for 1913 are the following:

"1. A new fuel-oil pumping station at the oil docks on Brazos River, embracing three pumps of large capacity, three boilers, and the connections to two fuel-oil storage tanks of 55,000 barrels capacity each, both of which have been equipped with inclosed tubular heaters for raising the temperature of the oil when necessary. The oil consumption is now nearly 2,000 barrels daily. At present the oil used is light Mexican crude from 17° to 21° (Baumé) specific gravity, but a delivery of heavy Mexican crude oil has recently been made by the Freeport-Mexican Fuel Oil Co. for the purpose of test, the gravity of the oil being about 12° (Baumé).

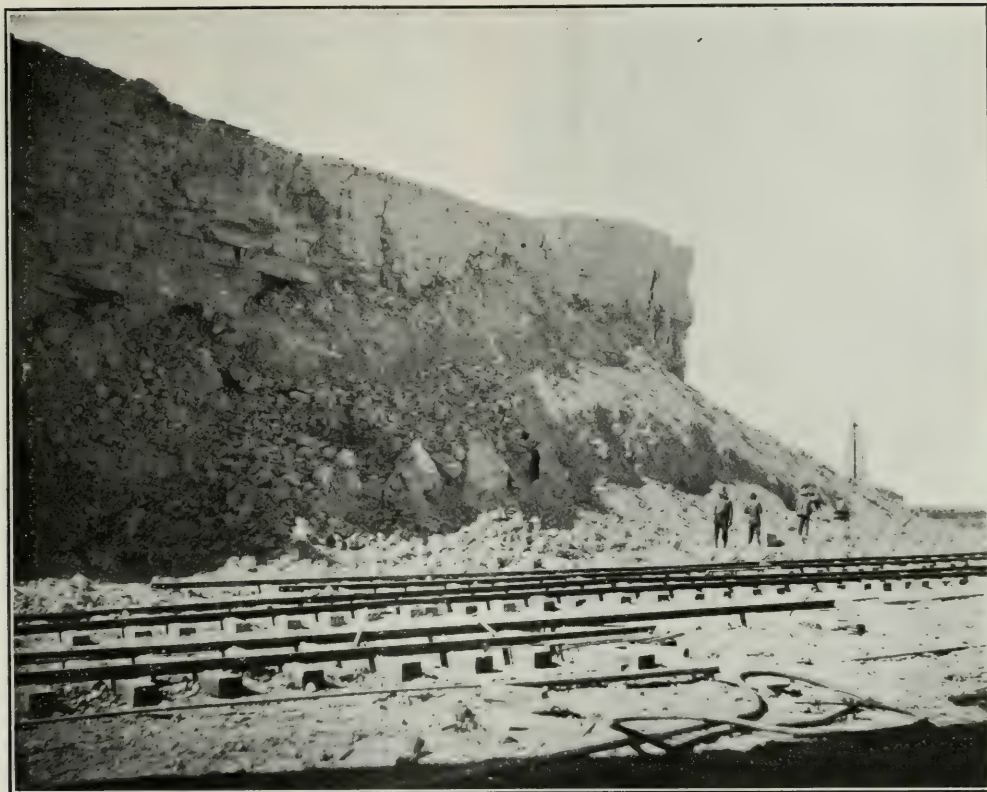
"2. An 8-inch pipe line approximately 4½ miles long leading from the oil pump station to the mines, in addition to the 4-inch line previously installed.

"3. Three additional fuel-oil storage tanks at the mines.

"4. Construction of a canal leading from Brazos River to the mines, a distance of about 3½ miles. This canal has been dredged to a minimum depth of 9 feet with a top width of

30 feet. At the terminus of the canal electrically driven centrifugal pumps take water from the canal and discharge it into a storage reservoir of 30,000,000 gallons capacity, from which ample flumes conduct the water to the pumps in the plants. The large motor-driven pumps discharge water into the reservoir at the rate of 9,000,000 gallons a day. As the daily consumption is about one-third that quantity, the operation of the pumps need not exceed ten hours a day; thus provision is made for future increased demand. This canal practically brings Brazos River to the plant and supplies all the mine water that will be required. As the river water is not always desirable, however, for use in boilers, wells have been sunk in the coastal plain surrounding Bryan Heights to reinforce the supply of boiler water.

"5. For the purpose of treating water for both boiler use and mine use, a lime treating plant has been erected and put into operation. Two large steel tanks are provided, each of sufficient capacity to contain a day's supply of reagents in solution—the quality and character being determined by daily tests of the water. These tanks are used alternately, their contents passing into a dilution tank where



BIN OF SULPHUR

Each bin is 80 by 140 by 50 feet and has a capacity of 25,000 tons.

water is added to make it easily possible to pipe the solution to the entry points of the water. All tanks are equipped with agitators, which, as well as the pumps for delivery of this solution, are motor driven. In connection with this treating plant are warehouses for storage of lime, etc. If necessary to treat river water for boiler use, soda ash is used.

"An interesting experiment is now in process in the hope of effecting a large economy in the heating of mine water. It has been proved that the normal temperature of the ground water in the geologic formation is 105° F. at all seasons of the year. As the water is now delivered to the plant for heating, its temperature varies with the season from 40° to 90° F. To raise this water to a temperature of 336° F. from 40° F. obviously consumes much more fuel than to raise it from 105° F. The ground water, however, contains scale-forming substances, and special equipment has been designed to prevent the precipitation of this scale within the heaters or piping.

"6. The area covered by producing wells was somewhat increased during the year, but with the present plan of placing wells at

corners of 100 feet squares only a small portion of the area known to be underlain by sulphur is supplying present requirements. The radius of heat influence undoubtedly varies greatly, according to variations in the character of the geologic formation, and the melt of one well is often communicated to its neighbor. Several wells are kept ready for steaming, so that whenever a well is exhausted interruption to production will be as short as possible. As wells fail contiguous wells are brought in in order to get the full benefit of communicated heat. At present two wells are steamed at once, with the expectation of soon steaming three at the same time.

AREA UNDERLAIN BY SULPHUR

"An area embracing many acres, chiefly under the mound known as Bryan Heights, has been demonstrated to contain sulphur, and arrangements are now complete to prospect this large area thoroughly, in order to locate the richest spots. The present output is most satisfactory, but there may be territory of greater richness than that now under development. This can only be determined by systematic exploration.

"The railroad serving the sulphur mines, with switch tracks to various points, has been completed. It is an extension of the Houston & Brazos Valley Ry., operated by the Missouri, Kansas & Texas Ry. At present a railroad ferry carries trains across Brazos River, but a combination railroad and wagon bridge is under construction and will soon be completed, thus greatly improving railroad service to Freeport and the sulphur mines."

The company's power plant has rated horsepower of 7,500 capable of being subjected to 100 per cent overload. One thousand seven hundred and fifty barrels of crude oil are consumed daily in firing the boilers. Over 3,000,000 gallons of water pass through this plant daily to be converted into superheated steam for heating the sulphur wells.

EXTENSIVE PHOSPHATE REPORT IS BEING MADE BY SURVEY

W. C. Phalen, of the United States Geological Survey, is working upon an extensive phosphate report. It probably will not be ready for distribution within six months.

Useful Mineral Data Being Revised

The Geological Survey data on useful minerals of the United States are being generally revised preparatory to the publication of the latest information in regard to them.

SOUTHWESTERN COAL OPERATORS

HONOR MEMORY OF J. F. ELLIOTT

The Southwestern Coal Operators' Association just has published its testimonial to the memory of the late James F. Elliott, of Haileyville, Okla., whose death occurred at Albuquerque, N. Mex., July 9, 1915. Mr. Elliott was vice-president for the Southwestern Association for Oklahoma. He was an active member of The American Mining Congress, and was chairman of its committee on State legislation for Oklahoma.

The testimonial was ordered spread upon the records of the association, published in the Bulletin, engrossed and signed by the past presidents, vice-presidents, officers and directors, in full and forwarded to the family. Those signing were: B. F. Bush, president, 1903-5; C. S. Keith, president, 1911-14; I. M. Fleming, president, 1914-16; R. T. Price, director; John Mayer, director; Dorset Carter, director; W. J. Jenkins, vice-president at large; P. R. Allen, acting vice-president for Oklahoma; C. F. Spencer, vice-president for Kansas; Ira Clemens, director; M. M. McWilliams, director; Harry N. Taylor, director; W. L. A. Johnson, general commissioner; J. H. Bovard, vice-president for Missouri; C. C. Woodson, vice-president for Arkansas; J. H. Hibben, secretary; F. W. Lukins, director; Jos. Fletcher, director, and B. T. Wiley, director.



Courtesy of Freeport Sulphur Mining Co.

MACHINE LOADING OF SULPHUR FROM BIN IN WHICH IT SOLIDIFIED INTO
FREIGHT CAR

ENGLISH AUTHORITY PRAISES U. S. EXPERIMENTAL WORK

Investigations of Coal Dust Explosions Much More Thorough in America, It Is Said

Costly Experiments in Britain Fall Far Short of Results Being Obtained Here

Results being obtained by the Bureau of Mines in its coal dust investigations are commended highly by the *London Iron and Coal Trade Review*. This paper comments as follows:

The account, given by Mr. George Rice of the American coal dust investigations, in his paper read before the Institution of Mining Engineers, of which an abstract appeared in our last issue, is of unusual importance. It recounts experimental results which, for the first time, we believe, have been obtained under conditions which duplicate those of the actual commercial mine. Without disparaging the excellent work done, first at Altofts, and then at Eskmeals, in experimental galleries, it is manifest that the long, straight, smooth passage of the experimental gallery furnishes very different conditions from those afforded by the rugged perimeters and constantly varying cross-sections observed in any considerable length of normal mine road.

DEFECT POINTED OUT

It is remarkable that this defect in our own costly experimental stations has not been more clearly perceived and more loudly condemned by men who claim to be at once practical and scientific. It is remarkable, because it has long been recognized that the violence of a so-called dust explosion increases with the resistance it finds in its path, owing to the increase of pressure thus generated. It is also common knowledge that the resistive force of friction in a rough mine road is many times greater than that found in a smooth, clear shaft. Obviously, therefore, the resistance of the smooth experimental gallery is vastly less than that of the normal mine road and less than that of the experimental mine employed in the American investigations.

It is not surprising, therefore, to now discover that the "1 to 1" mixture of stone dust and coal dust found sufficient for safety at Eskmeals is, according to Mr. Rice, usually found inadequate for the same purpose in an actual mine. It is not necessary to ask whether the dust and the gas at Pittsburgh are more sensitive than ours; it is sufficient to recognize that the American conditions were more severe, and more nearly like those which obtain in the normal mine itself.

The object of our experimental stations is not, as the Home Office staff appear to

imagine, and as Dr. Wheeler actually stated at the Institution meeting, to prosecute the "arduous investigations of the phenomena of pure coal dust explosions," if, by that expression Dr. Wheeler means, as seems evident from the context, explosions free from complicated conditions. Those comparatively simple phenomena can be predicted from theory alone. No one questions the standard theories of chemistry, and the Eskmeals reports have so far told us little about "pure coal dust explosions" which might not have been taken for granted at the very outset. The real object of these costly installations—if the authorities can be brought to understand it—is not so much concerned with the chemistry of pure coal dust explosions under simple conditions. It is principally concerned with the physical conditions which surround the complicated case of the mine explosion. Those conditions can never be found in a smooth steel tube. They may be more or less approximated to by erecting a few posts of placing an annular flange within the tube, but they cannot be duplicated by any such crude methods. The rugged perimeters and jagged surfaces must be reproduced as they exist in the average roadways and ramifications of the normal mine. The recognition of that fact by the American Bureau of Mines accounts for the bewildering contradictions which Mr. Rice's account throws at Eskmeals, where the fact was overlooked. And, in our judgment, the recognition by the American Bureau of that vital fact endows their published results with great authority. Otherwise, there is little essential difference between the results recorded from America on the one side and from Europe on the other.

SHOCK WAVES

The "tentative point of view" held by the American Bureau of Mines as to the nature of the shock wave following the discharge of the cannon may, however, assist the reader to more clearly understand the philosophy of the so-called retonation waves, which, it appears, is still a mystery to some enquirers, although the "kick" of a rifle is explained by the same principle. The retonation wave, in our view, is simply the resultant of two opposite forces, one, that of the shock wave due to the firing of the cannon, and the other due to the back pressure of the exploding material, which, like any other explosive, exerts equal force in all directions, including that pointing back to the seat of origin. As Mr. Rice himself says, though he fails to make the application, "If the pressure of an explosion does not materially rise in its course, retonation waves are not detected." Of course not; retonation cannot occur until the back pressure of the advancing explosion exceeds the opposite pressure of the original shock wave initiated by the firing of the cannon.

GREAT CARE EXERCISED THAT GOVERNMENT PUBLICATIONS BE WELL EDITED

Geological Survey Editor Is Man of Long Experience and Notable Ability—Fifty Thousand Pages of Manuscript Were Corrected Last Year—
“Technese” Is Translated into English.

Few readers of a well-written Government report realize how much of its order and clearness may be due to the work of the Department or Bureau editors. Editorial work is especially valuable to the reader of Government scientific reports, such as those of the Geological Survey, where a small group of editorial readers prepare for printing a great number of manuscripts covering a wide range of subjects. Many of these reports are purely technical and are of service only to the technical man, but a large and increasing proportion of them discuss subjects that are of general interest or of special economic interest—such as coal beds in the West or gold placers in Alaska—and the Survey maintains the ideal that such reports should be so written that they can be understood by any man of fairly good education or intelligence. Many of the writers of these reports, however, find it hard to attain this ideal, and the Survey, before sending a manuscript to the printer, “tries it on a dog,” an editor, who becomes its first untechnical reader. In reading the manuscripts the editor not only prepares it for printing—that is, corrects its paragraphing, punctuation, capitalization, and other details of printing—but, where necessary, cuts out repetitions and superfluous words and endeavors to substitute clear, simple English for “technese.”

COUNSELOR NOT MONARCH

If the editor finds, for example, that a certain geologic formation is described as made up of “hard beds of indurated strata,” he may suggestively cut out with pencil three of the five words that make the reading as well as the rocks unnecessarily hard. If he finds an author gravely writing that “conclusions are functions of observational data and are susceptible of only partial evaluation, and as the range of possible interpretation is inversely proportional to the data available the relevancy of conclusions may be called in question,” he is likely to “call in question” the value of such obfuscation and to suggest to the author that matter of this kind, commonly called “dope,” be cut out entirely. The editorial reader, however, is by no means the “blue pencil man” of the daily newspaper, who is an absolute monarch in his work. On the contrary, he is merely a counselor, and he is required to “make good” to the author, a requirement that affords at once a test of the value of the editor’s work and of the temper and patience of the author.

MUST HAVE TECHNICAL KNOWLEDGE

To maintain amicable relations with the authors and at the same time to render the readers of the printed reports, and therefore the Survey, real service by simplifying as far as possible reports that are likely to be read by nontechnical men, the editors must have diplomacy, patience and tact, a thorough knowledge of English, and considerable knowledge of science—of geology in its many branches, including petrography, chemistry (or geochemistry), mining technology and statistics, and paleontology, as well as of hydraulic engineering.

The editor also stands between the author and the printer somewhat as an interpreter, in making the man of science familiar with the rules and requirements of the printer’s art and in helping the printer to understand and express the scientific facts and theories, so that the printed book may do no violence to the ideas or ideals of either the scientific man or the printer.

The publications of the Geological Survey for the fiscal year 1914-15 numbered 210 books and comprised 23,754 printed pages. This matter reached the editors in the form of manuscripts amounting to about 50,000 type-written pages, and the editorial work consisted not only of preparing these manuscripts for printing, but of reading all the proof sheets and of making an index for each report.

The editorial force of the Survey consists of seven persons. The editor-in-chief, G. M. Wood, has been employed in the Survey’s editorial work for about thirty years, but insists that he still has a great deal to learn about editing manuscripts of scientific papers. Mr. Wood has prepared a pamphlet of sixty-three pages, entitled “Suggestions to Authors,” which includes hints derived from his long experience and which has been adopted as a reference book in several technical schools and colleges. Mr. Wood’s lieutenant, Bernard H. Lane, who has been employed by the Survey on its editorial work for more than ten years, combines a thorough familiarity with the printer’s art with a knowledge of the Survey’s special technicalities.

The Geological Survey is placing greater emphasis on the demand it makes of its authors for plain English, and in furtherance of this demand the editors find abundant work.

PRESIDENT SHOLZ LAUDS GOVERNMENT'S EFFORTS TO SOLVE INDUSTRIAL PROBLEMS

Tells Those Assembled at American Mining Congress that Federal Trade Commission is Doing Commendable Work—Wants Bureau of Mines and Geological Survey to Have More Money

Carl Sholz, President of the American Mining Congress, made various important recommendations and suggestions in his address before the convention held last month in San Francisco. His remarks in full were as follows:

An appreciation of the fitness of things determined the American Mining Congress to hold its meeting in San Francisco this year, and to participate in the Exposition which celebrates the completion of the Panama Canal.

Mining has had much to do with the development of the West and hence with the creation of those conditions which made the Canal, in a home sense, advisable. We may well say that mining is in fact responsible for the discovery of the Pacific coast, or at best its rediscovery under more favorable conditions. Until gold was found in California the vastness of the Western prairies, the snow-capped ridges of the Rockies, and the alkali deserts presented a series of barriers to the early settlers which they were not keen to try to surmount. To cross all three with primitive transportation facilities was a problem as difficult and as hazardous as the sailing of the unknown sea by Columbus some 400 years ago. The discovery of gold, however, brought a great number of people to the Pacific slope, and California's cities grew out of those mining camps. This magnificent city is one of the results.

FOSTER PARENT OF CALIFORNIA

Thus mining is the foster parent of modern California and, indeed, the underlying industry of the West. That is to say, the miners and prospectors soon learned to appreciate California's wonderful climate and soon learned the capabilities of its soil. This led directly to that great agricultural and horticultural development which has become famous the world over.

With the double productivity of the State proved, the railroads indulged in competitive campaigns looking to the construction of transcontinental lines to bring in the equipment to be used in the mines and to carry away the products of the soil. Thus began the trade exchange on which California grew.

These facts are mentioned because as miners we are proud of the strong influence which our industry has exerted upon a community so productive of great wealth that it finally called for and brought about the construction of the Panama Canal.

We have an interest in the completion of the Panama Canal as an engineering feat, namely, that in the execution of the work

mining methods were used, such as dredging, sludging and blasting. And, without the use of cement, which is also a product of mining, it would have been impossible to complete this work without excessive cost and delay.

RANKS FIFTH IN UNITED STATES

California is truly a great mining State, ranking as it does the fifth producer of the United States, with an annual value of the production of over \$100,000,000. This is more than the output of twenty other States. And the growth from nothing to this commanding position has been accomplished in less than seventy years. It is, therefore, proper that the highest tribute should be paid to the representatives of the mining industry in this State.

We are becoming accustomed to deal in very large figures in this country, but few not connected with the mining industry realize that the value of the mineral products of the United States in 1913 was in excess of \$2,500,000,000.

This convention at San Francisco was called mainly for the purpose of bringing together men interested in mining that they may appreciate that their purposes and their problems are one, even though their technicalities and their local conditions differ. To this end we afford opportunity for brief discussions, believing that with the ground cleared here of any and all misgivings the work will be taken up more actively and with more purpose when we return to our respective homes. With this in view, the list of addresses has been confined to the most urgent and important subjects. In keeping, this statement of your president is restricted to a brief review of the accomplishments of the year and to a few suggestions touching future needs.

The year just closing has been one of many and grave perplexities. The European war, which so seriously depressed the metal producing industry during the closing months of 1914, resulted in a healthy reaction to the copper and other metal industries in 1915. At the same time general business has endured a depression which had a detrimental and blighting effect upon the coal industry. This is especially true of the Central Western States. The exports of coal from the Eastern fields, or those adjacent to the seaboard, and the sales of coal to makers of war materials have in part offset the domestic trade losses.

To relieve their distress, strenuous efforts have been made by the coal operators of Illi-

nois and Indiana to devise and adopt permissible cooperative methods that would introduce economies and eliminate the disastrous and wasteful forms of competition, while leaving the competitive spirit full room in which to grow healthfully.

CURTAILED USE OF COAL

The increased use of water power, fuel oil and gas, the consolidation of light plants, and the establishment of electrical central power stations, have seriously curtailed the use of coal in various sections. These things, in addition to the unsettled trade conditions and to the influences growing out of the European and Mexican war situations, have brought about a serious situation for many coal fields; they have affected employers and employees alike. The aid of the Federal Trade Commission, which came into existence on April 1, has been invoked in an effort to find a solution for these problems. But the Commission feels that, as now constituted and endowed, it has no power to deal effectively with the situation. Even so, it is deeply in sympathy with the efforts of the coal owners.

This convention will be addressed by the ablest men in the country on the question of governmental regulation of business, hence it is not necessary to elaborate that subject here. Suffice it to say that it is the evident tendency that we are to become a Government by commissions; whether this will meet our complex needs is one of the grave questions of the hour. Its very gravity suggests that it should be the duty of every citizen to consider carefully this subject as the one most vital to his welfare and to the very existence of our form of government. Meanwhile, the enactment of the Clayton bill, which in a sense permits labor to do the very thing which the Sherman act denies to capital, suggests a growing political tendency to distinguish between forms of employment, degrees of wealth and the voting strength of the adherents of certain ideas which—seeing the indefinite and uncertain attitude of the courts—strikes at the very foundation of our Government. This Congress has been neither an antagonist nor a protagonist of capital. But it does stand firm on the doctrine that our Government must show partiality to neither. It insists that the National Congress and the State legislatures shall consider these economic subjects in terms of enduring principle and not in terms of relative voting strength of certain partisans.

It is not our belief that the report of the Commission on Industrial Relations as recently published was expressive fairly of the facts considered nor of any attitude which our Government can take. Its publication as a public document can work only mischief, and in consequence it is deplored.

WORKMEN'S COMPENSATION

Perhaps no social or economic subject has been so generously discussed as the propa-

ganda for workmen's compensation acts. Laws on this subject have been operative in a number of States for several years. This subject has been discussed frequently on this floor, and undoubtedly the statements here made have given helpful direction to many efforts to make these laws sane. Even so, there is great lack of uniformity and there is need that we address ourselves to that subject at once. For example, it is clear now that the compulsory feature, injected into the laws of several States, does not meet the approval of either the employers or the employees. This needs to be changed.

Also, employers generally believe that the industry should bear the cost of its accidents, but in many instances the decisions made by State commissions are manifestly unreasonable and result in litigation and ill-will, which is not desired by the employers and cannot be beneficial to the employees. A better way than now exists generally must be found for collecting and administering any fund collected for this purpose.

The attitude of the Government in endeavoring to obtain information which will assist it to find a solution for some of our vexing industrial problems is deserving of our commendation and should have our cooperation. The activities of the Federal Trade Commission are especially commendable in many directions, but in no one way more so than when it advised industries generally to adopt standardized accounting for the ready and accurate comparison of competing units and for the purpose of ascertaining costs.

The cooperation existing between the Bureau of Mines and the Geological Survey and the mining industry should be furthered by asking suitable appropriations for this work. In addition to the safety and life-saving features and rescue work, the complete utilization of our mineral resources should be encouraged. The great need for coal-tar products and its adoption for the separation of ores by the flotation process and other problems resulting in greater economy are deserving of the closest attention. Cooperation with the Federal Trade Commission in solving the problems of fair and unfair competition and an extension of trade relations is desired.

The question of control of the mineral resources, now withdrawn by the Government, is of the utmost importance. The present status is seemingly unsatisfactory to a great number, and it would seem advisable to bring the needs of the affected areas fairly before Congress to settle the present chaos with as little delay as possible and with justice and fairness to those directly affected.

TRIBUTE TO DECEASED MEMBERS

Reference to the development of the mining industry and the conservation of life and limb to those engaged therein would not be complete without recalling the untimely death of the first director of the United States Bureau of Mines, who, as a life mem-

ber of this Congress, was one of its staunchest supporters. A special session will be held on Tuesday, September 21, in commemoration of Dr. Joseph A. Holmes.

Death has also claimed other prominent members during the year. The West, in the death of Col. Thomas Cruse, has lost a prominent figure in the metal mining industry; the Southwest, Mr. James Elliott, who was our vice-president for Oklahoma and one of the leading figures in that section.

It is gratifying to say that notwithstanding the serious business depression, the finances of the American Mining Congress are in a healthy condition, and this in the face of the great drains upon our resources resulting from the expenses arising from the publication of the MINING CONGRESS JOURNAL. This has proved a valuable aid to this organization, if we are to judge by the many favorable comments received.

The organization of several new State chapters prompts the opinion that we are making headway, but it is evident that only by continued and unceasing efforts will we be able to accomplish our aim.

The cordial cooperation accorded me by the membership and the directors and officers is gratefully acknowledged.

ENLARGED HOMESTEAD TRACTS IN OREGON ARE INCREASED

Secretary of the Interior Lane has recently made an order which will increase the area designated under the enlarged homestead act in Oregon by more than 120,000 acres. These lands are in the eastern and central parts of Oregon, principally in Harney, Crook and Baker Counties.

The Secretary has also made an order, effective August 10, 1915, designating under the enlarged homestead act more than 60,000 acres of nonirrigable lands in Arizona, located in Maricopa, Navajo, Yavapai, Pinal, and Cochise Counties.

The President recently, on Secretary Lane's recommendation, issued an executive order excluding 6,960 acres of land from the White River National Forest, and providing for the restoration of the unwithdrawn public lands therein subject to disposition, to settlement only under the homestead laws from 9 o'clock a. m. August 17, 1915, until and including September 13, 1915, and thereafter to entry and disposition under the laws applicable thereto. The excluded area, which is in the Glenwood Springs land district, is situated along the eastern boundary of the forest, in the northwestern part of Colorado, in Garfield and Eagle Counties. It consists of a mesa varying in elevation from 8,500 to 9,000 feet above the sea level, and is more valuable for grazing than other purposes. The lack of water for irrigation gives it very little value for agricultural purposes.

COPPER IMPORTS DURING 1915 LESS THAN IN PREVIOUS YEAR

According to Department of Commerce figures, copper was imported into the United States during the fiscal year ending 1915, to the value of \$11,200,000. This compares with \$13,700,000 in 1914.

Copper manufactures imported during 1915 amounted to \$20,400,000, which is just half the importation of the previous year.

Imports of mineral oils in 1915 amounted to \$9,800,000. The importation of mineral oil in 1914 was \$13,700,000.

Bemis Bros. Issue Pamphlet

An interesting and effective setting forth of the merits of a product is accomplished in a pamphlet recently issued by Bemis Bros. Bag Co., of St. Louis. It has to do with ventilation of excavation work.

The pamphlet sets forth convincingly that the fabric tubing manufactured by Bemis Bros. furnishes an ideal flexible conduit for inducing air into excavations.

That there are opportunities for the use of this product in mining operations there is little doubt.

ACETYLENE MINER'S LAMP DISPLACING OLD STYLES

Three Hundred Thousand of this Type of Lighting Appliance in Use in Mines of the United States

Advantages and disadvantages of acetylene lamps for use in coal mines are pointed out by James W. Paul in a recent circular issued by the Bureau of Mines. In part, Mr. Paul says:

"Within recent years there has come into use in metal mines and in many coal mines in the United States a type of open-flame cap lamp for burning acetylene gas, the gas being made within the lamp by the use of calcium carbide and water. In some nongaseous coal mines this type of lamp has almost entirely taken the place of the miners' open-flame oil lamp, and in many metal mines it has replaced candles. The number of acetylene lamps in daily use in the mines of the United States is estimated at fully 300,000; 60 per cent of the lamps used in nongaseous coal mines and 15 to 20 per cent of those in metal mines being acetylene lamps. These acetylene-burning lamps are known to miners and to the trade as 'carbide lamps.' They are used in metal mines and in nongaseous coal mines, the use of safety lamps being required in gaseous coal mines.

"Acetylene gas has long been used for lights on bicycles and automobiles and in some houses. When acetylene gas was first used in lighting houses, bad machinery or improper care of the plants caused many accidents, and explosions followed by fires resulted in much

loss of property. Some persons who are considering the use of carbide lamps in mines may remember some of these accidents and desire information regarding the safety of the lamps. For the benefit of such persons the Bureau of Mines, which is directed by law to carry on investigations to make mining safer, issues this circular.

"A carbide lamp gives more light than a candle or miner's oil lamp, and the reflector used on some carbide lamps concentrates the light. Thus the careful miner has better protection from roof falls because he can detect dangerous roof conditions that he would not easily detect with an oil lamp or candle.

"The introduction of carbide lamps in metal mines and in nongaseous coal mines that are well ventilated should materially reduce the number of accidents resulting from poor light.

"Compared with a miner's oil-burning lamp or a candle, the time required for adjusting the carbide lamp to keep it burning properly is more than offset by the increased amount of work that may be performed in a day by its use.

GENERAL FEATURES

"Several models of carbide lamps are for sale, but certain features of design are common to all. A carbide lamp usually has two parts, one above the other, which can be screwed together. The top part holds water and the bottom part holds the carbide. The feed of water from the top part is regulated by a valve worked from the top or side of the lamp. A tube or compartment leads from the bottom part to the burner. In this tube or compartment are screens or felt to strain out solids and to keep them from clogging the burner tube. By means of a hook or handle the lamp may be fastened to the miner's cap, carried in the hand, or stuck on timber.

"Some models have reflectors back of the burner, others have none, and still others have the flame surrounded with a glass set in a frame.

ADVANTAGES OF CARBIDE LAMPS

"Some of the advantages that may be justly claimed for carbide lamps are as follows:

"As compared with an ordinary miner's oil lamp or a candle, a carbide lamp gives much more light.

"A carbide lamp is clean and the flame produces little smoke.

"The gases of combustion are principally carbon dioxide and steam (water vapor), and the acetylene is not injurious to health.

"The flame will not drop sparks and thus ignite explosives or anything that will burn as sparks from an oil lamp may do; however, the flame of acetylene will set fire to anything inflammable more quickly than will the flame of an oil lamp or candle.

"With the better light the working place can be more easily examined and dangerous roof conditions can be more readily detected.

"The general efficiency of the men is increased, because they are able to do more work with a better light.

"The cost of upkeep of carbide lamps is less than that of oil lamps or candles.

DISADVANTAGES OF CARBIDE LAMPS

"Some of the disadvantages in the use of carbide lamps are as follows:

"The flame, compared with that of an oil-burning lamp, is more easily put out by a sudden jar or by a shock to the mine air such as is frequently produced by blasting; however, the lamp may be quickly relighted if it is provided with some form of cerium igniter.

"When the flame is put out before the supply of carbide and water is used, the acetylene produced has a bad smell.

"As a carbide lamp will burn in air containing less oxygen and more carbon dioxide or black damp than will an oil lamp or candle, a miner using a carbide lamp may, without realizing it, work in air that is bad for his health or even dangerous to his life.

"The use of carbide lamps tends to lessen attention to the ventilation of the mine, especially as regards the presence of carbon dioxide or black damp.

"Careless or improper handling of carbide, such as permitting a quantity of it to come in contact with a pool of water in a mine, may cause an explosion or burn the men.

"Carrying carbide in the mine in a glass jar resulted seriously to a miner who accidentally dropped the jar in a wet place and ignited the gas.

"Cap lamps which have the gas generator attached to the belt of the miner are liable to leak at the generator or its tube connection, and the escaping acetylene gas may take fire and fatally burn the miner.

"Owing to the ease with which the flame may be put out by sudden jars or by a shock to the air, the carbide lamp is not well adapted for use by drivers, trip riders, or motormen."

SECRETARY LANE FORMALLY CANCELS AETNA CONTRACT

In its issue of last month THE MINING CONGRESS JOURNAL was able to announce the cancellation of the contract between the Department of the Interior and the Aetna Explosives Company. Since then official announcement has been made by Secretary Lane. The statement issued in this connection follows:

"Secretary of the Interior Lane announces the cancellation of the contract made between the Department of the Interior and the Aetna Explosives Company of New York, whereby the Aetna Company agreed to expend a sum of not less than \$200,000 in the development of the process, discovered by Dr. Walter F. Rittman, chemical engineer of the Bureau of Mines, for the manufacture of benzol and toluol from petroleum.

"It was explained that this action was taken after information had been received from Mr. A. J. Moxham, president of the Aetna Company, to the effect that such encouraging results had been obtained during

the period of experimental development of the process as to justify his company placing a plant on a commercially operative basis.

"The cancellation of the contract," Secretary Lane said, "is in accordance with the original understanding with the Aetna Company to the effect that the Government would withdraw from the contract as soon as benzol and toluol were produced by means of the Rittman process in commercial quantities.

"I am greatly gratified at the success which has been made in the mechanical development of the process, and I feel assured that the process has an important and successful industrial future, not alone as a source of two of the most valuable constituents of high explosives, but also as an efficient means of supplying dye stuff bases. The mechanical improvements which can reasonably be expected to follow from continuous operation and more general use are certain to give even better results than those so far obtained.

"It should be a matter of national satisfaction to know that, should the need ever arise, the country can depend upon this process, which is the result of the labors of a Government scientist, to furnish it with quantities of the raw materials for the manufacture of the most efficient explosives, lack of which has been one of the greatest handicaps of certain of the warring European powers. Of not less importance, however, is the peaceful industrial uses to which these same products can be put, now that it has been proven that they can be produced on a commercial scale, and I am hopeful that the established possibilities of the process will give a decided stimulus to important chemical industries.

"The success which has attended the development of this Government-controlled process in cooperation with private capital has demonstrated the wisdom of the arrangement, as otherwise the process would probably be in the laboratory stage, and its commercial possibilities would have continued to be a matter of conjecture. It is to be hoped that similar beneficial cooperation between the Government and business interests can be had in future, for the good of an entire industry.

"The Department of the Interior is ready to issue permits or licenses to any person or firm that can furnish assurances of good faith and that is desirous of employing the process.

"The Aetna Explosives Company has also agreed to develop the Rittman gasoline process, and I expect to be able to make announcement as to the success of this other process in large scale operation within a short time."

BUREAU OF STANDARDS PERFECTS IMPORTANT ELECTRICAL DEVICE

It is well known that a change in the voltage applied to the terminals of an incandescent lamp changes the candlepower, current, and in consequence the wattage

(watts equal volts \times amperes) and the watts per candle. If these changes are followed from point to point, relations among the variables may be found and plotted as characteristic curves. The equations of these characteristic curves for tungsten lamps have been found by the Bureau of Standards, Department of Commerce, and a special application of these equations has been made in a device which gives a solution of problems involving voltage, candlepower, and watts per candle.

In this device the volt scale is movable, and, by setting it to the other scales at a point corresponding to the observed watts per candle, values of per cent candlepower and of actual watts per candle may be read directly from the proper scales, or the converse problems may be solved. Use of this device results in a decided saving of time when compared with other methods of characteristic evaluation. In connection with the device are given tables of values used in its construction and practical examples illustrating scale settings.

The report upon this subject, just issued, has been designated Scientific Paper No. 253 and copies may be obtained without charge upon application to the Bureau of Standards, Washington, D. C.

IRON BACTERIA DISCUSSED BY GEOLOGICAL SURVEY EXPERT

E. C. Harder Is Making Field and Laboratory Tests of Phenomenon Little Studied in This Country

Interesting observations with regard to iron bacteria just have been made by E. C. Harder, of the U. S. Geological Survey. Mr. Harder is engaged at present in a detailed examination of the Cuyuna iron ore range in Minnesota. His laboratory work is being done at the University of Wisconsin. In addition Mr. Harder has made extensive experiments in iron ore in other parts of this country and spent four years aiding in the development of the important iron deposits at Camaguay. Mr. Harder's recent comment on iron bacteria follows:

"It has been known for many years that some of the higher bacteria are concerned in the precipitation of ferric hydroxide from iron-bearing waters. Thus *Crenothrix polyspora*, which is often abundant in city water pipes where the water contains a small percentage of iron, is held to be responsible for the frequent turbidity of the water in such places, due to the separating out of ferric hydroxide, and also for the filling of pipes with ferric hydroxide, which sometimes occurs. Certain other forms, like *Chlamydothrix ochracea*, *Spirophillum ferrugineum* and *Gallionella ferruginea*, have been abundantly encountered in surface iron-bearing waters, where they form thick gelatinous deposits of yellowish-brown scum.

More recently certain lower bacteria have been described which show the same characteristics with regard to the precipitation of ferric hydroxide and which seem to be very abundant in surface waters.

Different investigators have attempted to explain this phenomenon in different ways. Some, notably Winogradsky and Lieske, believe that there is an oxidation from ferrous to ferric iron and that this furnishes the bacterial cell with energy. Lieske also claims that, as the iron is usually in solution as ferrous bicarbonate, the carbon dioxide set free by the oxidation is used by the cell for building up its tissues. Other investigators, like Molisch and Ellis, state that the precipitation of ferric hydroxide is a simple chemical phenomenon and is not connected with the life processes of the cell. They believe that the accumulations of ferric hydroxide upon these organisms or upon their remains is purely mechanical. At the same time they admit the association of iron bacteria with iron-bearing waters, and realize that ocherous scums in such waters consist largely of bacterial remains.

Most of the investigations on iron bacteria have been made in Europe, and relatively few investigators have concerned themselves with the problem. At the present time the writer is engaged in a field and laboratory study of these organisms, and it is hoped that this work may throw some further light on the peculiar phenomena connected with their activities.

During the field work it has been found that iron bacteria are present in almost all iron-bearing waters, surface as well as underground. *Crenothrix* and *Spirophyllum* have been found in city waters, *Spirophyllum* and *Gallionella* have been found in the underground workings of mines even to a depth of several hundred feet, while *Chlamydothrix* and *Spirophyllum* have been found in surface iron springs and bogs. It seems that the bacterial flora of different localities varies. In some localities iron-bearing waters have a mixed flora, while in other localities one finds almost pure cultures of one or another of the higher iron bacteria. Thus some iron springs contain big, fluffy masses of *Chlamydothrix*, while others contain a brownish-yellow deposit consisting almost entirely of *Spirophyllum*. Some mines contain in their underground workings only *Spirophyllum*, while others contain mixed cultures. The reason for this difference is not known, but it is possible that the character of the salts in solution influences the bacterial flora.

Lower bacteria, of the coccus or bacillus forms which precipitate ferric hydroxide, are more difficult to study than the higher iron bacteria, as they can be distinguished only by their physiological activities. In order to determine the general distributions of such organisms in nature various iron solutions were inoculated with different types of water and soil and it was found that ferric hydroxide was precipitated from these solutions after an interval of time which varied with the different inoculations. These experiments show

the almost universal presence of organisms capable of precipitating ferric hydroxide. In order to show definitely that organisms were responsible for this precipitation, sterilized duplicates of the different cultures were prepared and these did not show any precipitation.

It was found likewise that solutions of different iron salts are affected in a different manner during these inoculations. In some solutions no precipitate forms, perhaps because the salts used inhibit bacterial growth. In other solutions, notably solutions of inorganic salts, the precipitation of ferric hydroxide takes place almost immediately, due to oxidation by oxygen present in the solvent. Certain solutions were kept under anaerobic conditions by passing carbon dioxide through them, and it was found that in some of them ferric hydroxide was precipitated, while in others no precipitation took place. In general the experiments have shown that precipitation may take place from solutions of ferric, as well as ferrous salts.

Up to the present the writer's attempts to isolate the lower bacteria present in soil and water, which are responsible for the precipitation of ferric hydroxide, have been unsuccessful, but it is planned to prepare and to experiment with various kinds of media in order to bring about this result. Until this isolation has been accomplished it will not be possible to study their morphology.

The morphology of the higher iron bacteria, unlike that of the lower, can be studied very readily, as they can easily be distinguished from other types due to their characteristic form. While it is comparatively easy to cultivate such forms as *Crenothrix* and *Chlamydothrix* in the laboratory, it is extremely difficult to isolate them from other forms in order to study their physiological processes. This is because of the fact that numerous lower bacteria find lodgment on the threads of these higher types, and are continually transferred with them.

One of the principal points of interest in connection with these investigations has been to note the relation that the iron bacteria might have to the formation of iron ore deposits. It has been claimed that they play an important part in the formation of numerous small deposits of bog iron ore, and it seems possible that their activities may in part be responsible for extensive beds of sedimentary iron ore as well. Further, the fact of finding iron bacteria in underground mines opens the possibility that certain underground deposits of iron ore have been formed by them.

Mr. Harder hopes soon to publish a detailed report on the results of these various investigations.

Big Demand for Enlarged Homesteads

During August there were 1,395 petitions for designation under the enlarged homestead act. During August 1,636,876 acres were entered under the 320-acre homestead provision.

EXPECT STATES TO CONTRIBUTE TO MINE EXPERIMENT STATIONS

With the approach of the assembling of Congress, interest is being revived in the Foster act, which provides for ten new mine experiment stations.

The act specifies that only three of these stations are to be established during the first fiscal year.

It will be recalled that it was impossible to carry out the provisions of this act due to the failure to provide an appropriation.

For the maintenance of these stations \$25,000 Federal appropriation will be the least upon which effective work can be done. Even this amount is inadequate, but it is hoped that the States in which the stations are located will contribute an equal amount.

It is the intention of those interested in this development of the Federal Government's work in the interest of mining to make these experiment stations as important to the mining industry as the agricultural experiment stations have been important to farming.

The locations of these stations will be left to the discretion of the Interior Department.

PERMANENCE OF VALUES IN CRIPPLE CREEK IS SHOWN

Details of the unusual discovery made in the Johnson mine at Cripple Creek recently have been brought to Washington by F. C. Schrader, of the Geological Survey.

This mine is on the southwest slope of Tenderfoot Hill, half a mile northeast of the town of Cripple Creek. This portion of the Cripple Creek area was thought to be barren prior to this find.

The strike which is exciting so much interest at present was made three months ago. The ore is being quarried like rock from an open cut. From a hole 40 by 20 feet and 20 feet deep, 300 tons of ore, averaging \$21 per ton, have been shipped. Sixty tons of the same class of ore are on the dump ready for shipment.

Mr. Schrader was in nearly all the deep mines in Cripple Creek during his visit. He says the values are remaining constant with depth in nearly every property. He is very much impressed with the prospects for profitable mining in the district for many years to come.

Mr. Schrader, in addition to his visit to Cripple Creek mines, looked after some land classification matters in the Durango district. He also visited the mines in the Leadville, Colorado Springs and Red Cliff regions.

A flourishing business is being done at the Abe Lincoln mine at Cripple Creek, he reports. This mine is fitted with specially constructed cages, and is specially prepared for visits from tourists. A large number of visitors are taking advantage of this opportunity to go through a mine.

INTERESTING REPORT ON WOOSTER OIL AND GAS FIELD COMING OUT

During the latter part of 1914, C. A. Boniene, of the Geological Survey, spent a short time in the Wooster oil and gas fields of Ohio, investigating geological structures. The report which will be based upon this work will be published in the near future. It is being awaited with more than ordinary interest by those in interested centers.

The region around Wooster, for the most part, is covered with glacial drift, hence the structure of the strata at the surface cannot be determined by obtaining elevations on these beds. It is highly probable, however, that the Clinton is far from parallel with the surface strata, therefore its attitude can only be determined by getting elevations of the field in the wells.

The structure of the Wooster pool, as shown by the elevation of the well heads, consists of a sharp anticline, with one or more branches, between which are rather deep depressions.

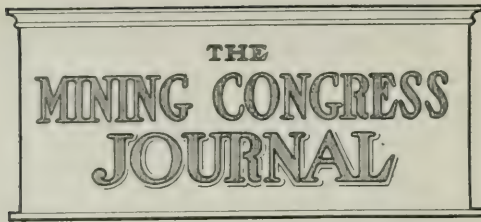
The wells away from the oil pool, however, are scattered so that the precise relation of the structure to the accumulation of oil and gas in this area cannot be determined conclusively. There is, however, more than a suggestion that the position of the oil pool bears a distinct relation to the main anticlinal axis.

OPPORTUNITY PRESENTS TO GAIN ITALY'S COAL AND COKE TRADE

According to advices received by the Chamber of Commerce of the United States from Charles F. Hauss, president of the American Chamber of Commerce in Milan, there is an opportunity, because of war conditions, for the United States to acquire coke and iron business in Italy. The demand for this metallurgical foundry coke and pig iron appears to be urgent.

Mr. Hauss informs the national chamber that war between Italy and Germany has stopped entirely the arrival of foundry coke and low-grade pig iron from Germany, and the local producers, which are the Salvay Process Works at Vado and Savona, near Genoa, are closed because they have no coal, and until the war is over very little coal and coke will come from England, from which country Italy has been importing about 70,000 tons of coke per year. The imports from Germany, Austria and Belgium amounted to 220,000 tons of coke per year.

"If the present feeling can be depended upon," Mr. Hauss informs the National Chamber, "Italy probably will never purchase from Germany again, or if she does, it will be after a long time, so that America never had a better opportunity to get and hold the coke and iron business in Italy."



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EDITORIALS

DISPROPORTIONATE HELP GIVEN TWO INDUSTRIES

There are two great backbone industries. They are mining and agriculture. These are the industries that produce new wealth. There is not much difference in the annual amount of new wealth created by each. Agriculture in the United States receives \$28,000,000 worth of Federal aid each year. Mining receives something over \$1,000,000. It is evident that this is not equitable. Why does such a disproportion exist?

There are various reasons. Principal among them is the fact that agriculture is a widely distributed activity. There are few Congressmen in the House of Representatives who are not from districts in which farming is conducted extensively. On the other hand mining is an industry that is concentrated. It is confined to certain limited mineralized areas. It creates nearly as much new wealth as does agriculture but it takes up less ground in its operations. For this reason Representatives from districts in which mining is conducted, always are in the minority.

In the Senate the result is the same, although there is no State in the Union in which no mining is conducted. Senators are charged to look after the interests of the State at large but in many States mining is of such comparative unimportance that little attention is paid to it.

This is the main reason why agriculture gets twenty times the appropriation allowed to mining. There is no reason why the relationship should continue so disproportionate. The minority is not powerless. In fact the last Congress demonstrated that the minority could accomplish a great deal when it set about it determinedly.

Mining districts must be very careful in the selection of their Representatives. They must have men who are able and determined. They must be the never-tire sort who will fight for the equal recognition of mining. This is not to be interpreted as meaning that the mining districts are not well represented in Congress at present. Some of the most able men in the body come from the mineralized sections of the country.

The American Mining Congress tries to aid these men by pointing out specific places where legislation is needed. We try to add to their enthusiasm for more just recognition of mining. We always have found these men grateful for such assistance as we have been able to render them. They too are very quick to do anything that they think will better the mining industry.

It must be remembered, however, that Congressmen represent all the people. They have to look after the farmer, the manufacturer and all others who contribute to our composite industrial fabric. Consequently if the needs of the mining industry are presented to them in condensed and easily assimilated form it is more certain to receive early attention, as the manifold duties of a Representative put a premium on each minute of his time.

This gives an intimation of one of the ways in which the Mining Congress is aiding those having mining interests.

The American Mining Congress is very determined that the mining industry

shall receive more assistance from the Government. It is going to use every honest, above-board means possible to increase the appropriations which benefit mining interests. It is a big task but cooperation has made easy work of much greater undertakings.

BENEFITS GO TO 90,000;

1,500 PAY THE BILLS

Members of the American Mining Congress are uniting in an effort to increase the membership of the organization. This follows the appeal made last month by President Carl Scholz and the recommendations to this effect made at the convention of the Congress which was held last month in San Francisco.

It is pointed out that one-sixtieth of the mining men of the country are paying for the benefits resulting from the work of the Congress, which go to all engaged in the industry.

A campaign for members in any organization cannot make rapid headway unless aid comes from the individual members. No loss of time or great amount of effort is necessary. In the course of conversation with a mining friend it can be suggested that he establish a membership in the Congress. This is all any member is asked to do.

Every new member brought into the organization is an asset to every old member. It means that the Congress is just that much more representative of the industry and has just that much more additional funds with which to work.

It would be profitable for any individual member to take a day off and give it to earnest efforts to secure new members. This, however, is more than can be hoped for and results will be remarkable if each member will do nothing more than to mention the matter of membership incidentally when he happens to be talking with friends who are not yet affiliated with us.

Do you know a manufacturer of lumber who does not belong to a cooperative organization? It is a matter of fact that they are few and far between. Why should not mine operators benefit by similar systematic effort?

ENGLISH TECHNICAL PAPERS

PROFUSE IN COMPLIMENTS

English mining and other technical papers have complimented the United States Bureau of Mines and the Geological Survey so frequently of late that it is a matter of comment here. This commendation has not been of a general nature, such as is indulged in, oftentimes, simply to express friendly feeling. Distinctive features have been singled out. Particular activities are made the subject of comment. Reasons are given for their classification as being highly praiseworthy.

As these English technical papers are noted for their conservativeness and for their high standing, the frequent tributes that are paid to the experts in the Government service indicate the plane on which their research is being conducted.

We are in a position to know just the class of men engaged in the Government service whose work is attracting such attention abroad. It is to the interest of the mining industry that no inefficient scientists find places on the staffs of the bureaus which work in the interest of the mining industry. If there should be any tendency to allow politics or any other influence to exert a depreciating effect on this standard, we would be very prompt to raise the cry of alarm. There is scarcely a day in which some member of the Mining Congress staff in Washington is not mingling with the men who have in their charge the work being done with the money appropriated to stimulate and make more profitable the mining industry. We marvel at the ability of the Government to secure the services of such able men for the salaries paid.

The Bureau of Mines and the Geological Survey are in the hands of directors of unusual ability. They have mapped out programs which promise results which will be beneficial to every man interested directly or indirectly in the mining industry. Their only handicap is the limited appropriations which are allowed them. Each expects to recommend additional expenditures for the coming year. It is the duty of every

man with mining interests to lend what influence he can toward the accomplishment of this very evidently necessary procedure.

DAY OF "ROUGH-NECK" TACTICS HAS PASSED

Need for careful judgment in the selection of the men who have direct jurisdiction over the employes in mines is becoming increasingly apparent.

The day once was when the operator of the mine knew every man on his force by name. In most cases the operator worked side by side with the men employed. In those days labor troubles practically were unknown.

The employer knew the difficulties which confronted his men. If there were sickness in the home, he knew all about it. If financial troubles came, he was in a position to extend intelligent aid. The relationship between employer and employe was such that each could estimate the other at his real value. As a result, congenial spirits sought each other out. The employe frequently worked with the same employer for years.

This relationship is held by students of labor problems as the ideal condition which surround employer and employe. When it existed in the mining industry friction between operator and workman was at its minimum.

After mining became a more systematized business, operations were undertaken on a larger scale. The administrative duties of the operator became so heavy that it required his presence almost continually in the office. He was not in a position to know every time John Smith had trouble. He was not on hand to sympathize and help smooth things out.

Perhaps the salaried foreman over John Smith was not interested in anyone's troubles but his own. He perhaps was not slow in letting this be known. Smith naturally resented this attitude, and an important factor in making the mine a success was lost.

The salaried boss must take the place, in so far as it is possible, of the employer

who once worked at the face with the men. He must be more than a foreman—he must be a diplomat. He should be selected with the care with which the operator selects a physician for himself when attacked by serious illness.

Nine-tenths of all strife is due to misunderstanding. The friction is even greater when applied solely to labor strife. Much of the friction now in existence can be reduced by systematic efforts on the part of the representatives of the operator who come in direct contact with the men.

The day of the "rough-neck" is past. A man who relies on intimidation to enforce discipline is on the wrong track. It has been demonstrated in thousands of instances.

The most lowly workman is entitled to fair treatment. He would get it if the average operator were handling his case personally.

In many large operations it is, of course, impossible for the owner or owners to handle such details. It behooves them, however, to pay the most careful attention to the selection of their subordinates, all the way down the line.

IS STATE DEPARTMENT OF THE WAGE EARNERS

There is a widely disseminated idea that the Department of Labor of the Federal Government represents capital and labor alike. The public, speaking generally, seems to be of the opinion that this Government agency is working just as much in the interest of capital as it is on the behalf of labor. This is not the case. The Department of Labor is maintained in the interest of the employes. As Louis F. Post, the Assistant Secretary aptly put it, "the Department of Labor is the state department of the wage earners of the United States. Just as the State Department represents the United States in matters of foreign relations, the Department of Labor endeavors to do with respect to the affairs of employes."

It is the intention of the Department of Labor to be as fair and free from bias as is the Department of State when it

makes representations to a foreign power. In matters of international relationship, it has been proven repeatedly in the history of the world that it never pays to try to "put one over." This Government justly prides itself on the high plane that it has maintained in its dealings with other countries. No unfair advantage has been taken to gain anything for the United States.

This same idea is being striven for in the Department of Labor, Mr. Post advises us. To have the wage earners represented by broad-minded men, who can lift themselves above the narrowness that often characterizes the attitude of workingmen's organization, is a blessing both to the employes and employers.

For the best interests of all, however, sight should not be lost of the fact that the Department of Labor is working as vigorously as it can for the employes. The Secretary of Labor by statute is charged with the duty "of fostering, promoting and developing the welfare of the wage earners of the United States, improving their working conditions and advancing their opportunities for profitable employment."

GILA COUNTY SECTION

DOING GOOD WORK

Patrick Rose, manager of the Gila County section of the Arizona Chapter of the American Mining Congress, advises that that section is getting along splendidly, and the membership is increasing rapidly. The section has held no recent public meetings on account of the extreme hot weather, but with the coming of cooler days, they expect to take active steps to secure a "Workmen's Compensation Law" fair alike to employer and employe. We feel sure the Gila County section will do its part in bettering mining conditions in Arizona.

Complete Excavation for Laboratory

Excavations for the new technical laboratory of the United States Bureau of Mines at Pittsburgh have been completed. The excavations for the new buildings are extensive, aggregating 72,000 cubic yards.

"We think that the American Mining Congress deserves the general support of those engaged in mining. We need a parliament of mining operators and engineers to assemble periodically with a view to crystallizing opinion on matters of moment to the industry.

"The social obligations of good citizenship call upon the members of the profession and the bigger brotherhood of all those actually engaged in mining operations to unite in giving effective support to the American Mining Congress."—Extracts from an editorial in *The Mining and Scientific Press* of September 18.

SURVEY COOPERATES WITH CITIES IN SEARCH FOR OIL

Cooperative work has been undertaken by the United States Geological Survey and the municipalities of Dallas and Fort Worth, Tex. Geologists have been furnished by the Survey to make a careful examination of the territory in the vicinities of these two enterprising Texas cities, with the object of ascertaining if the formation is favorable for commercial deposits of oil and gas.

E. W. Shaw and G. M. Matson, two of the Survey's oil and gas experts, are now engaged in this work. They will be in the field two months. No drilling will be done, but a careful examination of the outcrop of all strata will be made.

The salaries of the geologists on this work will be paid by the Geological Survey. This includes the time in the field, as well as that occupied in preparing reports a little later. All field expenses and temporary assistants will be paid by the municipalities.

A provisional report upon the region of the examination will be furnished by January 1.

STEEL COMPANY DEVELOPS EFFECTIVE ACCIDENT REPORT

The Bethlehem Steel Corporation, after some time has developed what is considered a most effective accident report. The only objection is that for every injury at least twelve special blanks must be made out, many of these being in duplicate or triplicate. Under present conditions it is considered practically impossible to do away with many of the forms now being used.

Visits Alaskan Field Parties

Dr. A. H. Brooks, who has charge of the division of Alaskan Mineral Resources, of the Geological Survey, is now in southeastern Alaska. He is visiting the field parties who are studying the geology of that section.

STRESS BEING PLACED ON PRACTICAL WORK AT PITTSBURGH SCHOOL OF MINES

Students Required to Reside at Workings During Portion of Year—Managerial Training Being Made Feature of Pennsylvania Institution—Both Coal and Metal Mining to Be Covered

The University of Pittsburgh in its School of Mines has inaugurated for this school year a course of study planned to meet the needs of students intending to qualify for positions in the management or administration of mining companies. Up to the present time, courses in mining have been more or less thorough in supplying the students with the technical facts necessary for successful pursuit of the profession from an engineering standpoint, and in providing some opportunity for practice in the various fields of study. Mathematics, physics, chemistry and geology, in their many subdivisions, form the basis for such a course, and are supplemented by the applications of these subjects to mining methods, and to civil, mechanical and electrical engineering, as these are used in mining.

The more progressive mining schools of the country include in their courses frequent visits of inspection to working mines, where the principles laid down in classroom and textbook are exemplified. In some cases the trips may occupy only a part of a day, while in others they last for several weeks, and many different mines are visited. A few, among which may be mentioned the University of Pittsburgh, go farther than this, and provide for temporary residence at a mine.

PRACTICAL INSTRUCTION

The students go out singly, or in small groups, usually in the summer, to certain mines at which the owners cooperate with the School of Mines in affording the student opportunity to study every feature of the mining operation. He works with the surveying party, accompanies the officials on their rounds of inspec-

tion, helps in the drilling and blasting, learns the operation of the mine machinery, such as fans, pumps, locomotives and hoisting apparatus, and studies the system of mining, together with the sanitary, housing and amusement conditions of the mining towns. In the course of three summers spent in this way, the student acquires a personal knowledge of mines under a variety of conditions. The results have been of great benefit, both to the students and to the companies, according to M. E. Wadsworth, dean of the school, writing in the *Pittsburgh Gazette*. The students on graduation have a much broader acquaintance with mining problems than they could acquire in any other way, and so are more valuable to employers at the beginning of their engineering careers. The companies find the services of men from such a school superior to those of men from institutions following only the accepted routine of textbook and recitation, and always prefer the former class.

FEATURE OF PROMOTION

While the system outlined above has been very successful in preparing students for the technical department of mining, it does not equip candidates for the management of mining enterprises. Some mining engineers have become managers, directors and presidents of companies, and have been of value to their companies because of their combined technical and administrative ability. But such promotion is much less common than it should be, because the average mining graduate is not equipped for service in any but the technical department, and consequently he does not become qualified until after a number of years of experience, if ever.

In order to overcome this objection, instruction has been provided for several years by the University of Pittsburgh in such branches of mining as costs, accounting, law and management. The improvement now planned is a more radical one, the establishment of a distinct program of study, to be known as the Management Option, for students who desire to devote a considerable portion of their time to problems of mine administration. This is to be accomplished without sacrificing the range or thoroughness of the present technical mining course.

STUDY OF COSTS

Each of the four subjects mentioned above will be amplified considerably beyond the limits of its present treatment, and to provide the additional time necessary, some of the specialized technical subjects now required of all students will be dropped from the curriculum of the Management Option. Teachers of special qualification, both as to training and experience, will direct the work in each case.

The study of costs of production will embrace both the metal and coal mining, and will cover the principal mining districts of the world. The graduate may find himself in a locality where low costs are of greater importance than perfection of mining method. Actual costs from different companies will be furnished to the student, who will analyze them in the light of the lectures given by the instructor, and investigate the underlying reasons for the results in each case.

A fraction of a cent is frequently a large percentage of the net profit on a pound or ton or other unit, as the case may be, of the product of a mine. The necessity of adequate accounting systems, not merely bookkeeping, but a thorough study of costs, is apparent. When such analysis has been made mining costs have often been reduced below what was previously considered a minimum.

Mining law and the court decisions bearing on it are now a necessary part of the mine official's personal equipment. In the study of the mining laws and those general laws relating to mining,

particular attention is given to those of districts where students of the school are most likely to be employed.

SCOPE OF COURSE

Under the head of management are included such problems as selection of the working force, division of duties, wages, labor organization, welfare work, efficiency, organization and financing of corporations and the general economics of mining. In the summers, the student will investigate the actual management conditions at certain mines where the facilities are freely provided by the owners.

On completion of the four years' course, including the management option, the degree of Engineer of Mines will be conferred. The graduate in this option should be so well equipped for service in this comparatively new field of activity that he will be in great demand among mining companies, and at a salary above that now prevailing for engineers. Besides, his advancement to a position of large responsibility should be rapid.

Although no public announcement of the new option has been made up to this time, the plans have come to the notice of a number of mining men in different parts of the country. Many of these, among whom are some of the most prominent in the mining profession, have expressed to the dean of the School of Mines their warm commendation of the proposed Management Option and their belief that it will meet a pressing need of the mining industry throughout the country.

Buyers of Tungsten

Owing to the interest in tungsten, the following list of buyers is given: Crucible Steel Co. of America, Pittsburgh, Pa.; Atkins Kroel & Co., 311 California St., San Francisco, Cal.; Bethlehem Steel Co., South Bethlehem, Pa.; Chemical Products Co., Box 1812, Washington, D. C.; Electro Metallurgical Co., Niagara Falls, N. Y.; Primos Chemical Co., Primos, Pa.; Taylor David & Co., Boston Bldg., Salt Lake City, Utah; Vanadium Alloys Steel Co., Latrobe Pa.; Sam E. Wegland, 117150 Michigan Ave., Chicago, Ill.; Wolf-Tongue Mineral Co., Boulder Colo.; Henry E. Wood & Co., Arapahoe St., Denver, Colo., and York Metal & Alloys Co., York, Pa.

URGES MORE ACCURATE METHOD OF DETERMINING INDUSTRIAL HAZARDS

Albert H. Fay, of Bureau of Mines, Points Out Reasons Why Present Methods Are Unjust to Operator, Miner and Insuring Organization—Yearly Hours Worked Vary from 1500 to 2400 in Different States

"The enactment of accident compensation laws in the various States calls for a more accurate method of determining industrial hazards than those now in vogue, viz.: on the basis of the average number of men employed. The prevailing method of determining the mining risk, on the basis of the number of men employed, is not just to the operator, the miner or the State, and especially so when comparing one State with another."

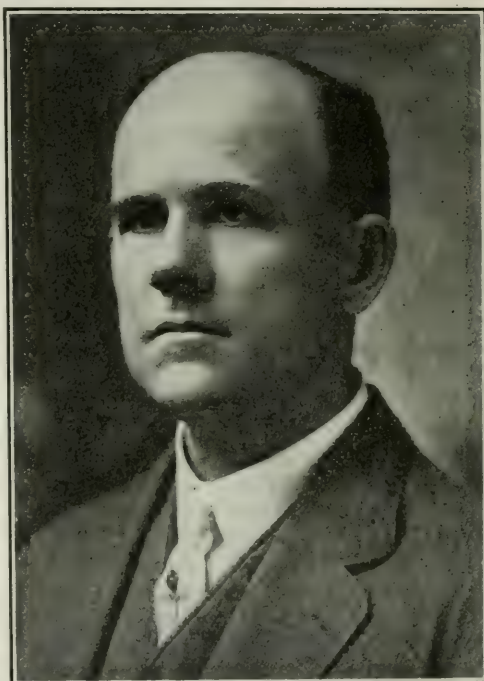
So said Albert H. Fay, of the United States Bureau of Mines, at a meeting of the Bethlehem (Pa.) Chapter of the National Safety Council held September 10 in the offices of the Bethlehem Steel Co., at which time a standing basis for calculating accident ratio was discussed.

"The time element should be taken into consideration—that is, the actual length of time (preferably hours) that the men are exposed to the underground dangers," continued Mr. Fay. "In some States the eight-hour day prevails, while in others the ten-hour day is common. Thus the ten-hour man is exposed to the risk 25 per cent longer than the eight-hour man. Furthermore, the eight-hour State may work only 150 to 175 days per year, as compared with 240 to 250 days for the ten-hour State.

AVERAGE HOURS VARY

"The average number of hours worked per man in the coal mines of the United States, over a ten-year-period, is 1,909. Some States for the same period average over 2,400 hours, while others work less than 1,500 hours per year. Evidently the hazard in these two extremes is apparently not the same, and by no means is it comparable. Yet comparisons are made on the basis of the average number of men employed (omitting the time element), and almost invariably the State working the smallest number of hours has the lowest rate, and is looked upon as a model State and secures a low insurance rate.

"As an example, one State with an actual fatality rate of 2.94 per thousand men employed, averaged less than 1,500 hours per man per year (a ten-year period), and another State in which the men worked considerably more than 2,000 hours, had a fatality rate of 4.25 per thousand. Here is shown the need of a common denominator to reduce the two States to the same basis. Taking 2,000 hours as a standard year (1,909 hours being the United States average for ten years), which is not far from actual conditions, and calculating a



ALBERT H. FAY

Statistician of the U. S. Bureau of Mines.

rate on the basis of 1,000 full-time 2,000-hour workers, the rate for the former State becomes 3.94 per thousand instead of 2.94, and the latter State becomes 3.96, as compared with 4.25, showing that the hazard does not vary so much from one State to another when the time element is taken into consideration.

"The insurance rate in the two States should be practically the same, yet on the prevailing method of determining risks, the hazard in the latter State is above 45 per cent higher than the former, which certainly is an injustice to one State, while in the other State the premium may not equal the actual hazard.

SUGGESTED SOLUTION

"A common year of a certain number of man-hours seems to be the most rational basis, as it places all of the States on equal footing. It does not matter whether this standard year be 2,000 or 3,000 hours, so long as a common denominator is used. If 2,000 hours is made

as a basis, an additional 50 per cent will give a 3,000-hour basis for comparison with other industries in which the 3,000-hour year is used.

"Another element that has an influence on fatality ratio is the system of mining. Some methods must necessarily be safer than others, yet exact data are lacking. Nationality, occupation and experience, each has an influence for good or ill. In the majority of the inspector's reports on accidents much of this information concerning the injured man is given but, unfortunately, the number of men of each nationality, the number engaged in each occupation, and the classification of men by length of experience is not given, nor is it possible under the present system to obtain exact data as to the actual number of hours worked by each class of men. All of this information is desirable, and when once obtained a time risk may be determined for any group of men by nationality, age, occupation and experience."

MANNING HONORED BY CHICAGO COAL OPERATORS

The Illinois Coal Operators' Association September 11 gave an informal luncheon to Van H. Manning, the director of the Bureau of Mines, who stopped in Chicago a day on his way to San Francisco. The luncheon was arranged on very short notice and thus it was not possible to have brought to Chicago the outside coal men who would have been very glad to meet Mr. Manning. Rather the banquet was under the auspices of the Illinois association, being arranged by C. M. Moderwell, as president, but there was included most of the local operators, whether they were from Illinois or Indiana, and some professional men. The luncheon was held at the Union League Club and only very short addresses were made by Mr. Moderwell, Mr. Manning, Geo. S. Rice, F. W. DeWolf and W. S. Bogle. Those who attended the luncheon were: Mr. H. C. Adams, of the Jones & Adams Coal Co.; Mr. Fred Schroeder, of the Purity Coal Co.; Mr. W. S. Bogle, of the W. S. Bogle Co.; Mr. Jas. Needham, vice-president of the Illinois Coal Operators' Association; Mr. Geo. B. Harrington, of the Chicago, Wilmington & Franklin Coal Co.; Mr. G. W. Traer, of the Illinois Coal Operators' Mutual Employers' Liability Insurance Association; Mr. J. Winchester Holman, president of the *Mining & Engineering World*; Prof. H. H. Stoeks, of the Mining Department, University of Illinois; Mr. Carl Scholz, president of the American Mining Congress; Mr. Van H. Manning, director United States Bureau of Mines; Mr. C. M. Moderwell, of the C. M. Moderwell Co.; Mr. Geo. S. Rice, Bureau of Mines, Pittsburgh; Mr. F. W. De Wolf, director Illinois Geological Survey, Urbana, Ill.; Mr. Jno. H. Swift, Bureau of Mines, Washington; Mr. Chas. I. Pierce, of the Big Creek Colliers Co.; Mr. F. C. Honnold, of the Chicago & Big Muddy Coal Co.; Mr. H. L. Smith, United States Bureau of

Mines, Urbana, Ill., and Mr. Geo. H. Cushing, of *The Black Diamond*.

NEVADA MINING CAMPS SHOW INCREASED OUTPUT

The United States Geological Survey has received reports from V. C. Heikes of satisfactory conditions in Nevada that promise well for the 1915 output of metals. Since May, the mines and mining districts of Nevada are more lively than they have been in years and more ore is being shipped than for months past.

Over 100 cars of ore per month are being shipped from the Yellow Pine District, in Clark County, where nearly every zinc and copper property is working, but zinc producers without contracts for their product are experiencing a hard time selling it at the present high prices. The silver mills at Tonapah are operating at usual capacity, treating about 10,000 tons of ore weekly.

On the Comstock lode the pumps of the Mexican and Ophir winze have lowered the water to the 2,700 level. Nothing that has happened on the Comstock in twenty-five years is of such importance as a vast quantity of virgin ground that has been opened up in the north end mines. In May the first ore in thirty years was brought up from the 2,500 level of the Comstock. Rochester District is equipped with a custom mill, and recently made a second shipment of silver bullion valued at \$26,000 after a run of sixteen days. The Nevada Consolidated mill and smelter at Ely are operating at full capacity. A flotation process has been added to its concentrator. At Thompson, the Mason Valley smelter remains idle and nothing is being made public concerning the success of the leaching process on Nevada-Douglas copper ores. The gold production for Nevada will likely not exceed the output of 1913, although greater activity has been reported from Seven Troughs and Goldfield Districts.

Spelter Data Attracts Attention

Considerable attention was attracted September 9 by the publication of statistics showing the production of spelter from January 1 to June 30. These statistics were compiled by C. E. Siebenthal, of the Geological Survey.

In addition, comment is made upon zinc production, consumption, stocks, importation, exportation, price, value, new smelter construction and total smelter capacity.

A list of the active smelters in the United States also is given.

Prepare Report on Antimony

Due to the unusual interest in antimony, the Geological Survey is preparing a report upon this metal. It is expected it will be ready for distribution in three months.

PLATINUM PLAYING PART IN MUNITIONS MANUFACTURE

Recent Increase in Price Results in Speculation as to its Causes—Report to be Published

Platinum is playing a part, along with most other metals, in the manufacture of munitions of war.

It is used extensively in the manufacture of contact mass. This consists of finely divided platinum precipitated on asbestos, or anhydrous magnesium sulphate.

Contact mass is used in the manufacture of sulphur trioxide (SO_3) and very concentrated sulphuric acid (oleum). Each is essential to the manufacture of high explosives.

While a considerable stock of platinum is tied up in contact mass, the metal is not used up, and will only be removed from the market during the period of abnormal manufacture of explosives.

Some speculation is being indulged in to account for the recent increase in the price of platinum. In this country by far the greatest quantity of the metal is used in the jewelry and dental industries. As is well known, 90 per cent of the Russian output is controlled by a French company.

Russian exports have been decreased greatly by the embargo which specifies that no more than \$275 worth of the metal may be sold to one person. When it is considered that platinum is worth \$45 an ounce, the amount of exports cannot be large.

To discourage shipment of platinum from Russia further, a 30 per cent ad valorem export tax has been levied. The American production is far below the amount of platinum consumed in the United States. Last year 3,000 ounces of platinum were produced here. The sales of platinum during the year were 40,000 ounces.

J. M. Hill, of the Geological Survey, the author of the 1914 report on platinum, has written interestingly concerning the peculiar status of this metal at present. This report will be published shortly.

Owing to the curtailment of the European supply of platinum, increased attention has been given to the deposits of the metal in Colombia. These deposits are found in the Choco district on the Atrato and San Juan rivers. Considerable development has been done on these deposits, but entirely by an English company. At present the production of platinum in this region is being sent to Europe. Owing to the absence of American operators there a number of refiners on the eastern coast of the United States, who are very anxious to secure new metal, but are not able to get any of this output.

The placer miners of California and Oregon saved 570 ounces (troy) of crude platinum in 1914, as compared with 483 ounces in 1913, according to statistics collected by Mr. Hill.

The greatest increase in production was in Oregon, which showed a gain of 85 ounces.

From this crude platinum 525 ounces of metallic platinum were extracted, valued at \$23,625 figured at the average market price, \$45 an ounce. The Boss gold-copper-platinum mine, near Goodsprings, Clark County, Nev., produced 110 ounces of platinum.

Besides the platinum obtained from sands and platinum ore 2,906 ounces of this metal were obtained from new material, of both domestic and foreign origin, by smelters and refiners of gold and copper bullion and mattes.

The secondary platinum industry handled 40,826 ounces of platinum, which was obtained from refining scrap metals and sweepings of the jewelry and dental trades.

Even if the imports of foreign platinum were greatly reduced, there are apparently sufficient stocks of this metal in the United States to meet domestic requirements. The price of platinum, which rose to \$50 an ounce just after the war was declared, had by July, 1915, fallen to \$37 an ounce, or \$8 an ounce less than the average in 1914. Another explanation of this low price may be the increasing use of tungsten, molybdenum, and nickel-chrome alloys in the electrical industry, and the use of plated ware in jewelry and dental work.

The following table shows the production of platinum in 1913 and 1914:

Country	1913	1914
Russia, crude.....	250,000	241,200
Canada, crude.....	50	30
New South Wales and Tasmania, crude	1,275	1,248
Colombia, crude.....	15,000	17,500
United States domestic, crude.....	483	570
United States refined platinum from foreign and domestic matte and bullion.....	1,100	2,905
Borneo, Sumatra, and others.....	200	.....

OIL FIELDS IN WOODSFIELD REGION OF OHIO ARE PROMISING

Preliminary reports on the geology of oil and gas fields in the Woodsfield and Summerfield quadrangle in eastern Ohio have been completed and will be published shortly by the Geological Survey.

These areas are of special interest to oil men on account of the large number of oil fields which are productive at one place or another. For that reason, exploration drilling has been carried on very thoroughly. There are at least 2,000 holes in the Woodsfield quadrangle alone. There are splendid possibilities of the productiveness of certain of the oil pools.

Field work necessary for the collection of the information for the report mentioned was done during the summer of 1914 by D. D. Condit, assisted by R. V. A. Mills and Frank Reeves, geological aides.

Observation on the geology of coal beds and other mineral resources in the area, in addition to oil and gas, will be treated in a separate report, which is in preparation.

INFERIOR MINING ENGINEERS ARE RESULTING AS SCHOOLS MULTIPLY

Prof. Robert Peele, of Columbia University, Points Out Dangers in Establishment of Institutions without Sufficient Financial Support to Provide Enough Instructors or Proper Equipment

Due to the establishment of schools of mines without enough financial support to employ sufficient instructors or to equip laboratories properly many inferior mining engineers are being turned out.

The number of mining schools has doubled in the last twelve years.

The real need of these schools is doubted.

No course of engineering study comprises so great a variety of subjects as does mining engineering.

These are some of the conclusions of Professor Peele in the following communication to THE MINING CONGRESS JOURNAL.

Professor Peele is the author of the article on mining engineering in the Cyclopaedia Americana. In 1907 he contributed a very valuable paper to Volume 10 of the Proceedings of the American Mining Congress. He has written profusely on mining subjects and is recognized as one of the country's leading authorities on mining engineering.

BY ROBERT PEELE

Professor of Mining, Columbia University

Since 1903 the schools of mines, or departments of mining in colleges and universities of the United States have increased from about thirty to probably nearly or quite double that number. The establishment in the past twenty or twenty-five years of this excessive number of schools is due to several causes, among which are the following:

1. As I have heard it expressed by a professor of mining in a Western college, it is often a matter of pride with the citizens of a State that their home institution should have a full university organization, including a school or department of mines, if the mining industry of the State is of any importance.

2. In other cases, the cause is to be found in the ambition of faculty or board of trustees or other governing body, to increase the scope of their institution, or its number of students, or both.



ROBERT PEELE

Of the School of Mines of Columbia University,
New York City.

3. In some States, where mining is a chief industry, the idea is prevalent that mining engineering can best be taught in or near a mining region, so that the student may conveniently visit and study the mines themselves. If the schools so situated actually avail themselves of their opportunities, it must be admitted that there is something in this idea; but, it has come to my knowledge in a number of cases that in these very schools the students are required to do much less systematic study in the mines than the students of other and better organized schools situated at a distance from mining centers.

4. The desire of parents to send their sons to their State institution has unquestionably exerted considerable influence. A smaller expense for traveling, living and tuition,

naturally appeals to those who have to count the cost.

5. Ignorance, or at least lack of full appreciation, of the elaborate and costly plant or teaching organization required to equip an efficient school of mines, I believe is an important factor.

DOUBTS NEED FOR SMALL SCHOOLS

There may be still other reasons, but these five seem to me to account for the establishment of many small mining departments or schools, the real need for which may well be doubted.

No course of engineering study comprises so great a variety of subjects as mining engineering. In this sense it is the broadest of the engineering courses. Besides the mathematics, natural sciences (especially geology, metallurgy, chemistry, and physics) and the specific mining and metallurgical subjects, the curriculum must include considerable parts of civil, mechanical and electrical engineering, since these have their part in the equipment and operation of mines and reduction works. In civil engineering it is indispensable to include the theory and practice of surveying, with the elements of railroad surveying, also strength of materials, hydraulics and graphic statics (the foundation of the design of engineering structures). Electrical engineering has become increasingly important in recent years, so that a mining engineer must have a reasonably good working knowledge of the principles and construction of both direct and alternating current machinery, and of electric transmission; also the principles of electro-metallurgy and electro-chemistry. In mechanical engineering are the fundamental subjects of mechanical drafting, thermodynamics, engines and boilers, gas and oil engines, and the engineering of power plants. I have not aimed here to give a complete list even of the important subjects which should be contained in an efficient curriculum for a student of mining engineering, or metallurgy, but only to outline the ground which experience has shown to be essential, and to illustrate my contention that a proper course in these subjects cannot be given in an institution which does not possess well equipped engineering departments, provided with their respective laboratories.

REQUIRE PRELIMINARY COLLEGE TRAINING

In very recent years several of the more thoroughly organized schools of mines have been put on a graduate basis. That is, recognizing the danger of excessive specialization on an insufficient foundation, these schools now require that entering students shall have had a preliminary college training in which science subjects are emphasized. This change is generally accompanied by a reduction in the length of the graduate engineering course from four to three years.

The organization of adequately equipped departments of instruction, as outlined above,

with their numerous laboratories, involves a heavy initial outlay and the annual maintenance charges are beyond the reach of any but strong and largely endowed institutions.

It is my conviction that the most efficient school of mines is one which is comprised in a group of technical schools, in turn forming a division of a university. Each of the technical schools has the staff and equipment for specializing in its own subjects, and the mining students have the advantage of receiving their necessary instruction in civil, electrical and mechanical engineering from specialists in each subject.

Conversely, the chief weakness of the small school, or institution attempting to teach mining is the fact that it is self-contained, instead of being intimately bound up with a strong group of allied engineering schools or departments of an amply endowed institution. Each member of its small staff is expected to teach a number of subjects. He can specialize in none. He must often give instruction in several quite unrelated subjects. It is difficult or impossible for him to keep abreast of the times, and it can hardly be doubted that his work is often of inferior quality. In past years I have sometimes been asked to recommend a candidate for a professorship of mining and metallurgy, or a man to teach such diverse subjects as surveying, assaying and strength of materials. In these latter days, as the engineering fields have broadened, no one man can possibly teach mining and metallurgy, any more than he can teach civil and mechanical engineering.

TURN OUT INFERIOR MEN

It seems unnecessary to elaborate this view of the question. The small, poorly supported, imperfectly organized and insufficiently manned, mining schools and departments of mining, of which there are so many examples in this country are turning out inferior men. They attract by the cheapness of their tuition charges, or by reason of their geographical location, many young men who would otherwise go to the stronger and better equipped schools. I believe the numerous small State institutions are most to blame for this condition of things. In saying this I do not refer to those well-known State schools which are doing unquestionably good work, but to those which are so poorly supported and equipped that they are positively detrimental to the mining industry.

CONDITIONS VARY MARKEDLY

Twenty-five or thirty years ago, when electrical engineering as a study was barely thought of and when mechanical engineering was far less developed and specialized than now, the student of mining was not burdened with such a multiplicity of subjects. A large proportion of the work in and about mines was formerly done by manual labor, and the limited variety of mining and ore-dressing machinery made the equipment and operation

of mines a simpler matter. The attention of the student was therefore concentrated in a narrower field, in which more thorough work could be done. More time could be given to chemistry, physics, mineralogy, and the application of these sciences to mining, metallurgy and ore-dressing. On the other hand, it is probable that the graduate of that period had less grasp of the practical side of mining as a branch of engineering. The young men of today are in constant, though often unconscious, touch with the multitude of mechanical devices which play their part in our daily life, and they are inevitably brought into contact in one way or another with engineering works of the most varied description, all of which cannot fail to develop the intelligence of things practical.

But these very conditions have so broadened the field of study that the customary four years' course is in danger of being overcrowded in the effort to keep abreast with the times. If the student's work be done in haste and under a feeling of pressure, his mental vision for the time being tends to become restricted. The development of his deliberative faculties may be impeded by living too much in an atmosphere of facts, for the proper assimilation and arrangement of which he has insufficient time.

ERRORS IN INSTRUCTION

In presenting some of the engineering subjects, undue prominence may be given to descriptions of methods and plant, the details of which vary from time to time as practice changes and advances, and too little to principles on which practice is based. The teaching of facts is one of the lower functions of the instructor, and when it is done without impressing upon the student the reasons for the existence of these facts and their relations to one another, the chief purpose of education is only partially fulfilled.

Undoubtedly the tendency of the present time is to consider the purely utilitarian aspect of technical education as first in importance. The student himself is usually much more concerned about the kind of position he will be able to secure after he graduates, and the salary attached thereto, than about the character of the training that will fit him satisfactorily to fulfill the requirements of that position and insure a larger measure of success in after life. Both he and his parents look forward with interest to the time when he shall be able to pay his own way. Nothing is more natural than this point of view, for the period of education is long and its cost considerable. But, in endeavoring to turn out graduates who shall be immediately efficient as engineers and capable of earning good salaries, there is danger of encroaching too much on that portion of the four years which should be devoted to a sound training in those subjects which underlie all engineering, developing the student's thinking faculties and teaching him how to apply engineering principles to the solution of practical problems. Mine man-

agers and others who employ young graduates have in a measure helped to bring about this condition by expecting too much from the four years of school training. Though many graduates actually do meet the requirements in a surprisingly efficient manner, the early failures are numerous enough to attract attention and arouse criticism.

THE PERSONAL EQUATION

The young men entering the schools, though of all sorts and kinds in their physical and mental capabilities, are driven through the course of study at the same speed and supplied with the same routine of work. Even if it were possible so to vary the system of training as to adapt it to each individual case, there would still be some failures. A uniform product cannot be expected from heterogeneous raw material. The exceptional men, who are naturally able and well balanced and endowed with the talent of common sense, may make good from the hour of their entrance into the field. Others, by assuming too soon positions of responsibility, attain success only through experience born of early failure. Still others, slower in their development, advance steadily after graduation, gaining experience in subordinate positions, learning to manage men, and so achieve substantial progress by the time they have been out of school a few years.

There are also the "round pegs in the square holes"—young men who are unfitted for any engineering profession and who, long before graduation, should have been directed into a more suitable career.

H. D. McCASKEY INSPECTS WESTERN OFFICES OF GEOLOGICAL SURVEY

In all probability the Western mineral resources reports will be more complete and submitted more promptly than before, as a result of suggestions made by H. D. McCaskey, chief of the Mineral Resources Division of the United States Geological Survey, on a recent inspection trip to the Western offices of the Survey.

Mr. McCaskey was forced to hurry back to Washington in order to complete some reports for which the matter became available earlier than was expected, and as a consequence he missed the American Mining Congress convention and the meetings of the other technical societies in San Francisco, which he expected to attend.

He visited with the heads of the three western offices of the Survey at Denver, Salt Lake City and San Francisco. He found the work progressing normally, with prospects good for an unusually successful year. He was impressed by the interesting way in which the mining exhibits are displayed at the fair.

MINING ENGINEERS TO FORM PROMINENT PART OF RESERVE CORPS

Nation-wide Movement Inaugurated to Supplement Engineer Corps of Army in Case of War—Plan Meeting with General Approval—Prominent Engineer Tells What It Is Expected to Accomplish

Mining engineers are going to fill an important place in the United States Reserve Corps of Engineers. The developments of the war in Europe bring out the fact that the mining engineer is fitted by training and experience to be of greatest service.

In addition to looking after the systematic and well-regulated supply of the numerous products of mines which are used in war, mining engineers are particularly well equipped to direct excavations of trenches and the running of tunnels. The average mining engineer is an expert on the use of concrete in construction, and could be utilized for road and railroad building, construction of bridges and the thousand and one activities in war which call for trained workers.

Dr. Henry S. Drinker, President of Lehigh University, is taking an active part in the movement. He is directing the effort to insure the cooperation of the nation's mining engineers.

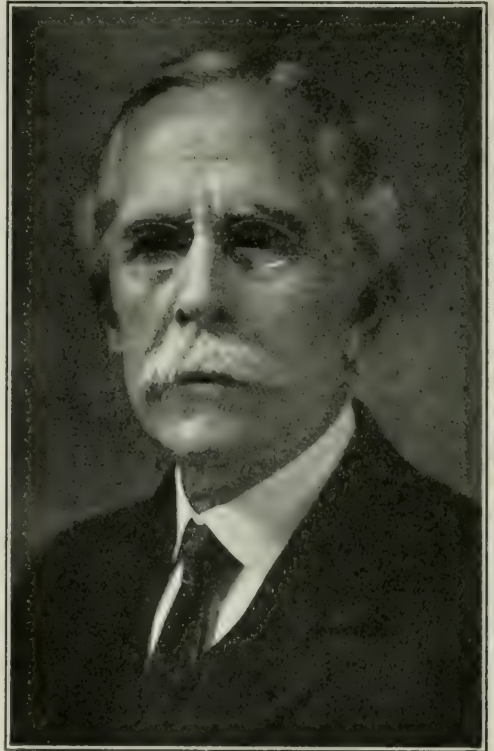
DESCRIBES PROJECT

A prominent engineer who recently discussed the reserve corps said:

"There are today in the United States Army about 250 engineer officers, who constitute a body of men as efficient as there is to be found in any army in the world. As a matter of fact, man for man, the Corps of Engineers of the Regular Army stands head and shoulders above any similar body of men in any army in the world. I say this without reservation.

"But these men would be but a handful to the number of engineers that would be needed if our country were called upon to fight a war. In a time of war the number of engineers who would be needed, and needed immediately, would be a great many times 250. Fortunately, the engineers are here, but up to the present time their organization into an efficient reserve corps has not been attempted. This is proved by the fact that there are probably more than 25,000 splendidly efficient men in the engineering professions of this country at the present moment.

"To revert to the possibility of war—which I, like all other good citizens, hope is remote—in such an event there would be work that must be immediately undertaken that would necessitate the services of thousands of our best engineers. It is in order to have these men ready to answer the call of the Government at a moment's notice that the present corps is being organized.



HENRY L. DRINKER, E.M., LL.D.

President of Lehigh University, who is marshalling the nation's mining engineers into an efficient reserve corps.

BIG PROBLEMS IN CASE OF WAR

"If war did come to us, among the first problems that would face the War Department would be those of fortifications, transportation, sanitation, water supply, inspection and development of materials, particularly ordnance and the manufacture of munitions, bridge building, automobile organization, aerial work, harbor protection (other than that afforded by the fortifications proper), the equipment for military purposes of our railroads, problems involving tunneling, the design and manufacture of engine and other equipment for our services, the manufacture

and development of high explosives, and hundreds of other things that would have to be done without delay for the better protection of our country.

"The fact that these things would have to be done, and done quickly, suggested the idea of which the proposed Corps of Reserve Engineers is the outcome. The various societies met and it was unanimously decided to place at the command and call of the Government a selected, qualified, and efficient body of engineers of varied experiences.

WOULD BE REAL RESERVE

"The corps will not be a paper corps. It will be one the services of whose members are always available. As nearly as it is possible, we hope to make it an actual active reserve of the army, whose members will study and keep in touch with the problems of national defense with which the engineer arm has most to do, who will at regular intervals go into the field for actual practice and training.

"For instance, suppose that the Government needed some information as to railroads, bridges, highways, or needed other information for strategical purposes outside of our own country. Would it not be a comparatively easy matter to intrust the getting of that information to a capable, loyal civilian engineer rather than to an officer of the Army or Navy, who would in practically nearly every instance be known to one or more officers of every other army or navy in the world? That's just a question that you can answer for yourself.

"The problem of organization, which I think I can assure you will be successfully worked out, is how to make a body of men in civil life practically a part of the Army of the United States. The answer to that question will probably be ready for publication in a very short time.

MUST HAVE ABILITY

"It should also be pointed out that it is not going to be a mere matter of application and approval to get into this corps. Every man who becomes a member of the Reserve Engineer Corps will have to fill the bill as to ability, character, and efficiency."

SYSTEMATIZE ADMINISTRATION OF WORKMEN'S COMPENSATION

That State commissioners having charge of the administration of workmen's compensation acts are developing their work along more systematic lines is indicated by the inquiries being received at different Government offices here.

These commissioners seem to be particularly anxious to have more detailed information in regard to mine accident statistics.

Most of the State commissioners are classifying their accidents as follows: Permanent, partial permanent, over fourteen days, one to fourteen days, and no time lost.

GEOLOGICAL SURVEY MAPS NOW OBTAINABLE FROM POSTMASTERS

The finest and most accurate maps of the United States are those made by the United States Geological Survey. This branch of the Government service prints more than 3,000 maps a day, or about a million a year, most of which are sold to the public directly from Washington. Book and stationery concerns in the larger cities, of course, handle these maps, but heretofore there has been no way in which the inhabitants of the small towns throughout the country could get them except by sending to Washington. Now, however, postmasters in towns and villages have the permission of the Postoffice Department to handle these maps. When the Geological Survey prints a new map it sends a sample copy to the postmasters in the area covered, with the suggestion that they tack it up in a conspicuous place, where everyone calling for mail can see it, and order a small stock for sale to those who wish to buy the map. This saves the purchaser the annoyance of sending to the Geological Survey and waiting until the map is received from Washington and also saves the expense of postage. The postmaster himself receives a small commission on each map sold.

Many active postmasters are handling the maps, and that their fellow citizens appreciate the accommodation of being able to buy Government maps at the postoffice is shown by the number sold in this way. The record of maps so sold shows that a postmaster in Minnesota heads the list so far, having sold 125 maps the first month he handled them.

Only postmasters in regions that have been recently mapped have been asked to handle the maps, but the Geological Survey willingly answers inquiries made by other postmasters, sending them a sample copy of the map that covers their district, if it has been mapped.

It is believed that this new plan of distributing the Government maps will benefit all concerned; it will be a convenience to the purchasers, it will bring the postmasters a small commission, and it will increase the sale of the maps.

REPORT ON OIL FIELDS IN SOUTHERN APPALACHIANS BEGUN

E. W. Shaw, of the Geological Survey, has begun work on an extensive report covering the southern Appalachian oil and gas fields. This report was started by M. J. Munn, when he was connected with the Geological Survey. Mr. Munn is now consulting geologist for the Gulf Pipe Line Co.

Mr. Shaw finds that it will be necessary to do considerable more field work in order to secure sufficient data to complete the report. This will require at least a year. Consequently it will be at least two years before the completion of the report.

CHINO COPPER CO. MAKES NEW RECORD AT ITS MILL

The total tonnage of ore treated for the three months ending June 30 by the Chino Copper Co., was 592,200, being an average of 6,507 tons per day. This is the highest average tonnage treated by the mill since the beginning of operations, the daily average for June being at the rate of 7,317 tons. The average content of the tonnage treated for this quarter was equivalent to 2.38 per cent. copper. For the first quarter of 1915 there were treated 406,000 tons of ore, being an average of 4,511 tons per day, containing an average of 2.19 per cent. copper. The average extraction for the second quarter of 1915 was 65.34 per cent., corresponding to a recovery of 31.16 pounds of copper per ton of ore milled. The average extraction for the previous quarter was 66.12 per cent., corresponding to a recovery of 28.90 pounds of copper per ton of ore milled. There were produced 41,735 dry tons of concentrates averaging 22.11 per cent. copper, as against 21,401 dry tons of concentrates averaging 27.41 per cent. copper for the previous quarter. The ratio of concentration for this quarter was 14.19 tons into 1 as against 18.97 tons into 1 for the first quarter of 1915, this decrease being due to the fact that the ore treated during the quarter was not of as good concentrating grade as that handled in the previous quarter.

The cost per pound of copper produced for the quarter, after allowing for smelter deductions and crediting all miscellaneous income, was 6.10 cents, as compared with 6.38 cents for the first quarter of 1915. These costs include, as usual, all operation, administration and general charges, and the regular charge of 30 cents per ton of ore treated for the extinguishment of mine development and stripping expense.

VAN H. MANNING APPOINTED ON ANACONDA COMMISSION

Van H. Manning, director of the Bureau of Mines, has been appointed by the Attorney General as a member of the Board of Experts to investigate and report regarding the operations of the smelter of the Anaconda Copper Mining Co., of Anaconda, Mont.

Mr. Manning is the representative of the Government on this board. He fills the place made vacant by the death of Dr. Joseph A. Holmes. Other members of the committee are John Hayes Hammond and Louis D. Rickitts.

Dr. White in San Francisco

Dr. David White, chief geologist of the Geological Survey, is in San Francisco, after an inspection trip over the Denver & Rio Grande Railway.

He also visited Gerlach, Nev., where he looked over the drilling operations, undertaken in an effort to find deposits of potash or nitrates.

INFORMATION REGARDING PLACER MINES IS BEING ASSEMBLED

**Will be Collected and Published in one Book
—Much New Matter is Being
Gathered**

Cooperating with the Bureau of Mines, the United States Geological Survey is preparing a complete report upon placer mining in the United States. Scattered through survey literature and other mining publications, a great deal of information in regard to American placers can be found. Owing to the difficulty in searching out this information, however, it has been decided to issue one volume, reviewing such matter as has been published, and bringing up to date all available information in regard to placer mining.

In order to obtain a comprehensive preliminary knowledge of the present status of the placer industry in all parts of the country, cards are being issued to all operators. It is requested that they furnish the following information:

Name of mine; name of owner, operator, location and accessibility; date of discovery; period of greatest activity; total production mined; character of deposits; character of gold available; value per yard; how worked; amount of gravel handled; amount of water used; length of ditch; operating costs, and some general information, in regard to the name of lode mines in the vicinity, the deposits of gold with reference to old channels, origin of the gold, description of gold saving plant, description of cross section of deposits from surface to bed rock, and information as to other valuable minerals found.

As this work promises to be of important aid to miners, the director of the Survey urges that all operators be prompt in replying to these cards.

Compiling Service Bulletin

The Bureau of Mines is compiling a service bulletin which will contain the name, address and telephone number of each member of the staff. In addition, the names will be classified in the divisions in which they are working.

Refund on Lead Ores

Reparation has been ordered paid to the Robert Fluorspar & Lead Co. by The Illinois Central Ry. The refund covers unreasonable charges collected upon lead ore from Marion, Ky., to Carnegie, Pa.

Has Big Lignite Resources

It has been estimated by the Geological Survey that the State of North Dakota contains the enormous amount of 697,000,000 short tons of lignite in beds over three feet thick, within a thousand feet of the surface.

IMPORTANT OBSERVATIONS MADE IN SILVER MINES IN COLORADO AND OTHER STATES

Comprehensive Study of Silver Enrichment Under Way—Dr. Edson S. Bastin Visits Monte Christo Mine, Famous for its Native Silver, and Other Notable Properties Including the Comstock at Virginia City

Since the pioneer work of J. F. Emmons, at Leadville, and of Walter Harvey Weed at Nelhart, Mont., it has been recognized by geologists that many silver ores owed their richness to a process known as "secondary enrichment" or more properly "downward enrichment."

Briefly, this process consists in a reworking of the original or primary ore, through the agency of surface waters entering the ore body. These waters dissolve silver from the oxidized surface portions of the lode and re-deposit it farther down in the form of native silver or of various silver compounds.

Largely because of the great decline in the price of silver, the attention of mining men and geologists has been turned more to the study of the ores of other metals, and such fragmentary information as has been gleaned in regard to silver enrichment has been incidental to the exploitation and study of other metals.

BASTIN ASSIGNED TO WORK

Two years ago, however, the Geological Survey decided to undertake a special field and laboratory study of the process of silver enrichment and Dr. Edson S. Bastin was assigned to the work, his previous study of the ores of Gilpin County, Colo., having given him an interest in the problems involved. In the chemical side of the work, he has the cooperation of Dr. Chase Palmer, well known for his work in chemical mineralogy.

In the course of the first year's field work, the silver mines of Lake City, Ouray, Telluride, Rico and Dunton, in Colorado, were visited and during the present field season, the Patagonia, Wickenburg and Kingman regions in Arizona, and Tonopah and Virginia City in Nevada, were visited.

The ore of the Monte Christo mine near Wickenburg is probably the richest native silver ore now being mined in the United States, and the study of the rich specimens collected should prove of unusual interest.

SPENDS MONTH AT TONOPAH

At the rich camp at Tonopah, Nev., over a month was spent in the mines, and three months already have been spent by Dr. Bastin in cooperation with F. B. Laney, of the U. S. Bureau of Mines in painstaking microscopic study of its ores.

The famous Comstock Lode at Virginia City, Nev., which is credited with a production of nearly half a billion dollars, is now only a shadow of its former self, but while little could be learned from underground study in the few workings now open, microscopic study of samples from the old bonanzas may yield valuable information.

The hot workings of the Comstock are not pleasant places to linger in even for a geologist devotee of volcanic rocks. The temperature of the mine water at one place where it was measured by Dr. Bastin, was 149° Fahr.

The determination of the extent to which the silver minerals of a particular mining camp are primary or secondary is of great practical importance inasmuch as ores, which are primary, are likely to be relatively persistent in depth, while those which are secondary will play out or at least decrease in value with depth.

The result of this work will be published as short papers in each district, as its study is completed. The whole series eventually will be assembled in a comprehensive Survey report.

BRITISH COLUMBIA AGREES TO COOPERATIVE AGREEMENT

Cooperation has been agreed upon by the United States Bureau of Mines and the Department of Mines of British Columbia. The following letter from the Minister of Mines has been received by Van H. Manning, director of the Bureau of Mines:

"I have the honor to acknowledge the receipt of your letter of the 11th instant, stating that the Bureau of Mines will be pleased to cooperate with the Department of Mines in British Columbia in the matter of issuing certificates of mine rescue training to holders of similar certificates issued by our department, upon the applicant taking a two-hour test wearing apparatus, and satisfying the examiner that he is entitled to such certificate, and vice versa on our part with applicants who are holders of certificates issued by the Bureau of Mines of the United States.

"The department desires to express its appreciation of this further proof of the broad, liberal policy which has always been prominent in the work of the Bureau of Mines.

"A copy of your letter will be sent to the instructors in our Rescue Stations."

Traffic Developments of the Month

COMPLAINT DISMISSED

Carrier Not Held When It Delays Installation of Promised Side Tracks

The complaint filed by the Picher Lead Company of Joplin, Mo., against the San Francisco Railway, for failure to extend side tracks, has been dismissed.

In discussing this case, Commissioner Clements said: "The complainant alleges that demurrage charges in the sum of \$615 on certain carloads of coke were unlawfully assessed, and reparation is asked in that sum.

"In December, 1912, the complainant, finding that the tracks connecting its plant with the defendant's main line were inadequate for the proper receipt and unloading of coke, which commodity the complainant uses in large quantities, made application to the defendant for the construction of a 60-foot extension to one of complainant's unloading tracks. The defendant agreed, rather informally, to make the extension promptly, but although the physical work involved could have been completed in three or four days, the track was not actually completed for more than a year. The complainant operates under an average demurrage agreement with the defendant, and states that the excess of debits over credits which accrued during the period in question would not have resulted had the extension been promptly built.

"There are five spur tracks running into complainant's plant, averaging from 100 to 150 yards in length. Parts of four of these spurs can be used in placing cars for unloading. On one of them there was room for two cars, on another six, on another four, and on still another six. The spur to which the extension was to be added is over 100 yards long, but only the end of it is used for unloading coke.

"In the spring of 1913 the complainant, relying on the defendant's promise to extend the coke spur, placed orders for its yearly supply of coke, to be delivered in installments. It is stated that because of defendant's failure to make the extension promptly the shipments could not be expeditiously handled when they arrived and that the demurrage charges were due to the defendant's breach of contract. While in the complaint the delay in unloading is attributed only to defendant's failure to fulfill its alleged contract, there was also some evidence presented at the hearing to the effect that a small portion of the track was torn up when several cars were run off the end thereof, and that the complainant's inability to unload the cars promptly was due in part to that fact; but it is wholly insufficient to support a finding that detention of the cars involved was due to this. Furthermore, it does not clearly appear that the detention of cars resulting in accrual

of the charges in question was unavoidable, for there were other points in complainant's yards where it was physically possible to unload coke cars, although they were used for other purposes.

"The so-called contract for the track extension was of an informal character, and appears to have been only a promise to comply with complainant's request therefor. Even had it been a formal written contract, the question of alleged damages resulting from its nonfulfillment would be one for determination by the courts, and not by this Commission; therefore what is here said is not to be construed as implying that we would reach any different conclusion in this case if a formal contract had been entered into.

"Upon consideration of all the evidence of record we are of opinion and find that the charges in question are not shown to have been improperly assessed."

Pyrite Rate Excessive

Reparation has been allowed by the Commissioner in the case of the La Follette Iron Co., against the Southern Ry. Co. A refund of \$238.39 was ordered on account of unreasonable charges on sixty-four car loads of pyrites from Athens, Ga., to La Follette, Tenn.

St. Louis Hearings

Hearings have been assigned in St. Louis for October 17 and November 1. On the former date, I. & S. 595, which deals with coal rates from Illinois mines, will be discussed before Examiner Bell.

The hearing of November 1 deals with complaint 6,128, which is that of the Vulcan Coal & Mining Co. v. Illinois Central. This hearing originally was assigned for October 1, but was postponed.

Attack Mining Machinery Rates

Rates on mining machinery from Milwaukee to Ironwood, Minn., and Bessemer, Mich., have been attacked by the Newport Mining Co. of Milwaukee in the complaint against the Chicago & Northwestern Ry., which has been filed with the Commission.

Rehearing Denied

A rehearing in the matter of coal rates from Illinois mines to Omaha and other points, which was filed by the Southern Coal, Coke & Mining Co., has been denied by the Commission.

Complaint Dismissed

At the request of the complainant the case of the Dilltown Smokeless Coal Co. v. Buffalo, Rochester & Pittsburgh Ry. has been dismissed by the Commissioner.

UPHOLDS RAILROAD

Commission Says Carrier Is Justified in Refusing Coal Storage at Perth Amboy

In the case of the Plymouth Coal Co. v. Lehigh Valley Ry. Co. the Commission finds that the defendant was justified in its refusal to continue to furnish storage bins at Perth Amboy, N. J., for the free storage of anthracite coal.

The defendant's demurrage regulations concerning anthracite coal for shipment at tidewater, at Perth Amboy, N. J., were found to be reasonable.

To Discuss Iron Ore Rates

A hearing in the matter of rates on iron ore from Lake Erie to points in Ohio, West Virginia and Pennsylvania has been assigned for October 18. The hearing will be conducted in Pittsburgh.

Plymouth Company Gets Reparation

Reparation has been granted the Plymouth Coal Co. in its case against the Lehigh Railway.

The Commission found that the rates charged for transportation of anthracite coal from Luzerne, Pa., to Perth Amboy, N. J., for transshipment were unreasonable.

Ordered to Pay Drayage

The Central Railroad of New Jersey has been ordered to pay drayage incurred on a shipment of ferro-manganese from Rockaway, N. J., to Reading, Pa. The complaint was filed by Crocket Bros.

FAIL TO FATHOM OBJECT OF FRENCH EMBARGO ON PLATINUM

Government's Experts Believe Present High Prices of Tungsten Are Very Unstable—British Move Checks Mining

Experts here are at a loss to understand why an embargo has been placed upon platinum by France. Substitutes for this high-priced metal have been found for practically every use in military appliances.

Tungsten is being used almost entirely for the points of auto sparkplugs. Electric contacts are being made with tungsten instead of platinum. Even in electrical furnaces, platinum resistance wires are no longer being used to a great extent. This information is from one of the best authorities in the Government service.

The embargo on platinum is expected to stimulate a search for additional deposits of this metal in the United States.

There are increasing uses for platinum being found each year and the demand for the metal is not expected to decrease greatly, owing to its substitution in electrical and other uses.

Nichrome is being used largely for the resistance wires on small electric furnaces, instead of platinum, which formerly was used exclusively. Nichrome is very much superior to platinum for this purpose. Tests were made upon a small optical furnace in this city lately. It was found it is necessary to wrap the furnace from four to twelve times a year with platinum wire, while the use of nichrome wire made re-wrapping necessary only once each six months.

Tungsten continues to soar. It is the advice of the Government's geologists that miners having any tungsten ores bend every effort to mine them and get them to market quickly. Present prices are regarded as being very unstable.

There is a possibility that production will be so stimulated that the price may fall, even if the war should continue indefinitely. Certainly with the first real talk of peace, the price of the metal will tumble.

Every projectile being manufactured is turned with tools containing from 16 to 20 per cent of tungsten. It also is entering into the composition of various steels now in great demand.

Much interest was excited here by Great Britain's action in commandeering all tungsten ore in the United Kingdom. By fixing the price at 55s. per unit, the British government has taken away much incentive for mining tungsten ore within its own territory.

Tungsten ore has been sold in this country for double the price fixed by the English authorities.

Great Britain has designated H. A. Watson & Co., of Liverpool, as the only firm allowed to make purchases of tungsten ore.

Tungsten mining in Burma has been discouraged also by local legislation, it is reported. Laws recently enacted in that British possession are described as highly discouraging to mining operations. They already have resulted in considerable curtailment of mining operations.

SALT LAKE CITY MINERS

HONOR PRESIDENT SCHOLZ

Carl Scholz, president of The American Mining Congress, and party, who left Chicago in a private car September 16, en route to the eighteenth annual convention of the American Mining Congress at San Francisco, stopped for a few hours in Salt Lake City, where they were met by the board of directors of the Utah Chapter. The officials of the Utah Chapter had planned extensive entertainment for Mr. Scholz and his party, but as their stay was curtailed on account of a railroad accident, which caused them to reach Salt Lake City several hours late, the original plan was abandoned. A reception, however, was held at the Hotel Utah, and the party was taken for an automobile drive about the city. G. A. Mackenzie, secretary of the Utah Chapter, left with Mr. Scholz's party to attend the convention.

Recent Legal Decisions

FAILURE TO SUPPLY CARS

A railroad company doing business as an interstate carrier is liable for damages caused by its failure to furnish a coal miner and operator with cars in which to load coal for shipment to points within and without the State, where it is charged that the railroad company unjustly discriminated against the coal operator in failing to distribute cars in accordance with its own rule applicable in times of shortage. The act to regulate commerce (24 U. S. Statutes at Large, 379; 34 U. S. Statutes at Large, 584), does not give shippers any new right but preserves existing causes of action and does not supersede the jurisdiction of State courts in any case where the decision does not involve the determination of matters calling for the exercise of the administrative power and discretion of the Interstate Commerce Commission, or relate to a subject as to which the jurisdiction of the Federal courts has otherwise been made exclusive; and in actions against railroad companies for unjust discrimination in interstate commerce where the rule of distribution itself is attacked as unfair or discriminatory, a question is raised which calls for the exercise of the authority of the Interstate Commerce Commission; but if the action is based upon a violation or discriminatory enforcement of the carrier's own rule for car distribution, no administrative question is involved, and such an action, although brought against an interstate carrier for damages, arising in interstate commerce, may be prosecuted either in a State or the Federal court and the action may be based either on the common law rule or on a State statute.

Illinois Central R. R. Co. v. Mulberry Hill Coal Co., 238 U. S. 275, p. 282, June, 1915. See *Pennsylvania R. R. Co. v. Puritan Coal Mining Co.*, 237 U. S., 121, p. 127, April, 1915.

BROKER'S COMMISSION

Where an agent or broker is employed by the owner of mining property to secure a purchaser and the agent brings to the owner a purchaser for such mining property, and the owner enters into a contract of his own making with the purchaser so furnished, the owner thereby accepts the purchaser so found by the broker, and the broker's commission is then due, although it may afterwards turn out that the customer was not financially able to buy.

Knisely v. Leathe (Missouri), 178 Southwestern, 453, p. 459, June, 1915.

EXPERT EVIDENCE

In an action by an injured miner for damages and in controversies over mining prop-

erty, the conditions may be such that experts will be allowed to give expert testimony by way of opinion because they are presumed to have acquired peculiar skill and knowledge and are more capable of forming a correct opinion as to the subject matter of the question under discussion than inexperienced persons, and their opinions are admitted in evidence for the purpose of aiding the jury in understanding questions which inexperienced persons are not likely to decide correctly without such assistance; but the testimony of such experts may receive only such consideration by the jury as the testimony may appear to the jury to deserve.

American Bauxite Co. v. Dunn (Arkansas), 178 Southwestern, 934, p. 936, July, 1915.

EFFECT OF INTOXICATION

The mere fact that a miner was intoxicated at the time he received an injury does not of itself show contributory negligence as will defeat his recovery in damages for the injury, but it is a circumstance to be considered in determining whether or not his intoxication contributed to the injury.

American Bauxite Co. v. Dunn (Arkansas), 178 Southwestern, 934, p. 935, July, 1915.

WRONGFUL DEATH OF MINER

In an action for the wrongful death of a miner under the provisions of the statute of Arizona giving a right of action for injuries resulting in death, where there is no averment in the complaint as to whether or not the deceased miner had elected to accept compensation under the provisions of the workmen's compulsory compensation act of Arizona, the fact of such election is a defensive matter and if not raised by a plea or answer it is waived by the defendant, the mine operator.

Behringer v. Inspiration Consolidated Copper Co. (Arizona), 149 Pacific, 1065, July, 1915.

LOCATION NOTICE

The object and function of a location notice does not extend to conferring full title to mining properties, and it differs from ordinary documentary muniments of title in that it is not title nor proof of title, nor does it constitute, nor of itself establish, the possessory right in issue and to which it relates; but it is purely a creature of statute and when duly recorded becomes notice to the world of the facts therein set forth, the description of the premises claimed and by whom claimed, and to secure the discoverer or locator against others seeking to locate the same ground, and is constructive notice of the locator's possession. The statute seems also to make it one

of the steps requisite to make it a perfected mining location, and the notice is sufficient if it contains all the matters required by the local statute and was recorded within ninety days after the commencement of the location.

Copper Queen Consolidated Mining Co. v. Stratton. (Arizona) 149 Pacific 389.

DEFECTIVE LOCATION NOTICE

A location notice that is defective because it fails to contain the required statutory recital is not void, but voidable only, and is, under the Arizona statute, subject to amendment, and after amendment the original location notice and the amended notice are admissible in evidence in a controversy over the mining location.

Copper Queen Consolidated Mining Co. v. Stratton. (Arizona) 149 Pacific 389.

APPROPRIATION OF LAND

The validity of statutes for the appropriation of private property for mining purposes may sometimes depend upon many different facts, the existence of which would make a public use, even by an individual where in the absence of such facts the use would be clearly private, but such facts must be general, notorious and acknowledged in the State and are not the subject of judicial investigation, but are well known by the courts; and the courts in the construction of such statutes will notice the situation and conditions leading to the demand for the enactment of such statutes and in their construction may consider the results upon the growth and prosperity of a State which in all probability would flow from a denial of the validity of such statutes, and all such matters may have a material bearing upon the question whether the individual use proposed is not in fact a public use. But for the existence and validity of such statutes, the owners of mines and of works for the reduction of ores, the operations of which furnish thousands of men in the State with employment at good wages, and to which the general prosperity of the State is largely due, would be denied the right to invoke such statutes when necessary to the successful operation of their business, or for acquiring rights of way for the transportation of ores from the mines to the mills and smelters, or for the construction of tunnels for drains, or for necessary lands for the deposit of tailings; and parties holding title to ground necessary and suitable for these purposes, which might be entirely worthless except for such purposes, would be clothed with power to demand and compel payment of unconscionable prices for their lands before parting with the title, or they could refuse absolutely to grant the easement required on any terms, and thereby cripple mining enterprises or destroy them altogether. Courts may know that such a policy would not only be inconsistent and unreasonable, but would greatly retard the development of one of the greatest natural resources of the State; and in consideration of such facts, persons and corporations owning and operating mines and mills for the reduction of ores may under

such statutes condemn land for obtaining water for mining purposes, the construction of rights of way for tunnels, flumes and dumping places for tailings, where the statute makes ample provision for the payment of a fair price to the owner of lands sought to be condemned as well as for all damages that he may suffer because of the appropriation and use.

Goldfield Consolidated Milling, etc., Co. v. Old Sandstrom Annex Gold Min. Co. (Nevada), 150 Pacific 313, p. 316, July, 1915.

Clark v. Nash, 198 U. S. 361, 25 S. Ct. 676.

Strickley v. Highland Boy Gold Min. Co., 200 U. S. 527, 26 S. Ct. 301.

Highland Boy Gold Min. Co. v. Strickley, 28 Utah 215, 78 Pacific 296, 107 Am. St. 711, 1 L. R. A. (N. S.) 976.

DEPOSIT OF TAILINGS

A mining corporation engaged in milling and the reduction of ores, depositing the tailings from the treatment of its ores upon a portion of its own land lying in a gulch and there conserved the same for the purpose of retreatment, but where by reason of high waters and floods, large parts of such tailings were washed down upon the land of an adjoining owner, has the right under the statute of Nevada (Revised Laws, Sections 2456, 2458 and 5606) to condemn the land or a sufficient part thereof for a right of way for a tramway for the purpose of erecting a tram thereon to reconvey such tailings to its mill, and the common law rule to the effect that a structure erected by a tortfeasor upon the lands of another becomes a part of the land does not apply.

Goldfield Consolidated Milling, etc., Co. v. Old Sandstrom Annex Gold Min. Co. (Nevada), 150 Pacific 313, p. 317, July, 1915.

NECESSITY OF CONDEMNATION

In a proceeding by a corporation operating a mill for the reduction of ores to condemn lands for the deposit of its tailings the law does not require that an absolute necessity should exist for the identical lands sought to be condemned, but it is sufficient if the lands sought to be used will be of great benefit and advantage to the mining industry of the particular community; that it is necessary to condemn such lands for the protection and advancement of these interests, and that the benefits arising therefrom are of paramount importance as compared with the individual loss or inconvenience to the owner of the land; and generally under such circumstances the discretion of the corporation in the selection of land for its use will not be questioned where it acts in good faith and not capriciously.

Goldfield Consolidated Milling, etc., Co. v. Old Sandstrom Annex Gold Min. Co. (Nevada), 150 Pacific 313, p. 318, July, 1915.

APPROPRIATION OF SURFACE

The fact that a tract of land sought to be appropriated for deposit of tailings by a mining corporation operating a mill and re-

duction works is a patented mining claim will not defeat the proceedings for appropriation where it appears that the claim was not in fact being worked and had not been worked for several years, and the mere possibility that the land may some time in the future be used by the owner for mining purposes will not prevent condemnation of a right of way for a tramway, and especially where the use for which the condemnation is sought will not interfere with the operation of the land as a mining claim.

Goldfield Consolidated Milling, etc., Co. v. Old Sandstrum Annex Gold Min. Co. (Nevada), 150 Pacific 313, p. 319, July, 1915.

LAND APPROPRIATED

The statute of Nevada provides for the right of eminent domain for certain public uses and provides also for the appropriation of the fee of land, but the statute does not say that the fee simple shall be taken, but only that it is subject to be taken, and in condemnation proceedings only such an interest as is necessary can be taken.

Goldfield Consolidated Milling, etc., Co. v. Old Sandstrum Annex Gold Min. Co. (Nevada), 150 Pacific 313, p. 319, July, 1915.

EXEMPTIONS FROM TAXATION

Article 10, Section 1, of the Constitution of Nevada, as originally adopted, exempted all mines from taxation, but this section was amended so as to permit assessments for taxation of all patented mining claims, but any patented mining claim upon which \$100 worth of work is annually done is made exempt from taxation, and the purpose of this change was to stimulate mining.

Goldfield Consolidated Milling, etc., Co. v. Old Sandstrum Annex Gold Min. Co. (Nevada), 150 Pacific 313, p. 316, July, 1915.

DECLARED A PUBLIC USE

By Section 2456 of the Revised Statutes of Nevada, mining for gold, silver, copper, lead, cinnabar and other valuable minerals is recognized as the paramount interest of the State and is declared to be a public use.

Goldfield Consolidated Milling, etc., Co. v. Old Sandstrum Annex Gold Min. Co. (Nevada), 150 Pacific 313, p. 316, July, 1915.

OWNERSHIP OF TAILINGS

A corporation engaged in milling and the reduction of ores deposited the tailings therefrom upon a portion of its own land lying in a gulch through which water flows at times in great volumes and with great force, and, notwithstanding all reasonable efforts by dams and otherwise to retain its tailings, the tailings eventually were forced upon the lands of an adjoining owner. These tailings were valuable and their retreatment, intended by the mill owner, profitable, and the fact that the tailings were so washed down upon the lands of an adjoining owner and permitted to accumulate and remain for some considerable time is not sufficient to show an abandonment

on the part of the owner of the tailings where it is clear that the owner had no intention of so doing, but, on the contrary, always intended to conserve and retreat the tailings.

Goldfield Consolidated Milling, etc., Co. v. Old Sandstrum Annex Gold Min. Co. (Nevada), 150 Pacific 313, p. 317, July, 1915.

LAND FOR TAILINGS

The statute of Nevada, Section 5606, Revised Statutes, provides that the right of eminent domain may be exercised in behalf of such public uses as tunnels, ditches, flumes, pipes and dumping places to facilitate the milling and smelting or reduction of ores, or the working of mines, and for all mining purposes as well as for outlets, natural or otherwise, for the deposit or conduct of tailings, refuse or water from mills, smelters or other works for the production of ores, or from mines, mill dams, natural gas or oil pipe lines, tanks or reservoirs (Statutes of 1907, p. 279), and under this section, together with Sections 2456 and 2458, a corporation engaged in mining and milling and reducing by other methods gold, silver and other ores has the right to condemn land for the deposit of the tailings from its mills.

Goldfield Consolidated Milling, etc., Co. v. Old Sandstrum Annex Gold Min. Co. (Nevada), 150 Pacific 313, p. 316, July, 1915.

NOT DUE TO WAR

Arizona Man Says Copper Prices Will Slump Before Long

"Most of the increased demand for copper and other metals seems to be for domestic consumption rather than because of the European war." This unusual view of the situation was taken by S. A. McLane, a mining man of Phoenix, Ariz., who was in Washington recently. "At the outset of the war the price of copper took a tumble and many of the mines were forced to close, but for several months everybody has been busy. There has been a big demand for skilled labor in the mines, and wages have increased correspondingly. The price of copper has reached a high mark, which, of course, cannot be maintained, nor do the mine owners expect it to be. The peculiar feature of the copper market, however, is that notwithstanding copper is contraband, and the demand abroad not what might be expected, the price rose steadily. There is no doubt that much copper is finding its way to Europe, but sales registered abroad would not warrant the increase in the price.

"Business is getting better everywhere," continued Mr. McLane. "Business men and the public appear to be optimistic, and manufacturers are getting busier every day. In some parts of the West there has been too much rain, which has damaged the crops, but the yield, I believe, will be fully 80 per cent. of normal in those sections where it has rained hardest."

Recent Patents of Interest to Mining

REDUCES HEAT LOSS

Mining Sulphur, No. 1,152,499. This invention is by the late Herman Frasch, of New York, N. Y., and is assigned to the Union Sulphur Co. of Jersey City, N. J.

It relates more particularly to obtaining sulphur by melting it in a natural deposit underground and removing it therefrom in a melted state.

Mr. Frasch stated that the highly heated water introduced as fusion fluid into the deposits of sulphur, flows away underground instead of returning to the surface, and enormous volumes of highly heated water thus introduced into the deposits have been flowing away for a number of years. This water has always carried into the deposits many times as much heat as would suffice to melt the amount of sulphur actually obtained. Notwithstanding the evident accumulation of heat in the ground, the quantity of heat necessary to be sent into the deposit in order to obtain a given amount of sulphur became larger and larger with the progress of exploitation, while the tonnage in a given time with a given plant became less and less.

To overcome this condition, Mr. Frasch found that by a restriction of the fusion fluid, to certain parts of the deposit, and by crowding the fusion fluid upward by water of lower temperature keeping it away from much of the sulphur, and by withdrawing from the deposit water of a temperature below the melting point of sulphur, the fusion fluid could be better distributed in the deposit and could consequently be utilized to better advantage. Mr. Frasch claimed by this process not only to be able to check the increase in the amount of heat required per ton of sulphur produced, but to lower such amount below the average of previous operations, and to attain a higher production per well per day. He further claimed that it is possible, by this method, profitably to obtain sulphur which could not otherwise be obtained profitably, if at all.

PUTS MAGNETS UNDER LOG WASHER

Magnetic Ore-Washer, No. 1,153,037. This invention is by Edward W. Davis, of Minneapolis, Minn.

The object of this invention is to provide an apparatus for separating iron ore from sand or gravel, generally known as "gangue" in which magnetic force or attraction is utilized to cause the adhering together and precipitation of lighter particles of ore which may be mingled with particles of sand or gravel, and which in a gravity separator would be carried out with the tailings of the machine.

Machines of this kind are usually so arranged that the revolving blades stir up the

sand and gravel and cause them to float toward the surface of the water and be carried out with the waste matter. To avoid this Mr. Davis has provided a series of electromagnets beneath the log washer, which cause the small particles of ore which would usually be washed out with the waste matter to be directed by the magnets and precipitated to the bottom of the troughs. These small particles as they enter the field of magnetic attraction will not only be drawn toward the pole pieces of the magnets but will also adhere, a number of particles uniting to form a larger particle and remaining in this relation while they are in the field of attraction and for a long time after being discharged from the log washer.

ASSIGNED TO METALS RESEARCH CO.

Recovery of Cuprous Sulphide from Ores and the Like, No. 1,151,235. This invention is by Raymond F. Bacon, of Pittsburgh, Pa., and is assigned to the Metals Research Co., of New York, N. Y.

This invention is based upon the discovery that when cupric sulphide is subjected, under suitable conditions, to the action of a hydrocarbon, the result of the reaction is to reduce the cupric sulphide to cuprous sulphide and to bring about a more or less complete union of the available hydrogen and sulphur to form hydrogen sulphide.

Illustrating his invention, Mr. Bacon gives the following example: "The cupric sulphide may be charged into a suitable receiver, which may conveniently have the form and dimensions of an ordinary still, adapted to be heated. If the cupric sulphide charged contains a large quantity of moisture then the containing vessel should have a sufficient capacity to take care of such foaming as is incident to the operation. It is usually preferable to admit the hydrocarbon upon the top of the charge, rather than to mix it therewith, for the reason that by dropping the hydrocarbon upon the top, a quantitative reduction of the cupric sulphide to cuprous sulphide can be effected with a lesser supply of hydrocarbon. It usually will be desirable to employ an amount of hydrocarbon somewhat in excess of that theoretically required for the reaction. It is also feasible to shower the cupric sulphide through an atmosphere of hydrocarbon vapor.

REDUCES SPECIFIC GRAVITY OF ORE

Ore Separating Process, No. 1,151,117. This invention is by Arthur J. Moxham, of Wilmington, Del., and relates to the well-known process of separating solids of different specific gravity, by means of a liquid of relatively high specific gravity.

The invention is designed to reduce the specific gravity of the ore by coating it with

a blanket liquid or other material of specific gravity, substantially lower than that of the separating liquid. In describing his invention Mr. Moxham says: "It has been determined that if certain grades of ore are wet with a large excess of suitable coating liquid and drained for a period of time, it retains a considerable portion of liquid. By reason of the surface attraction between ore and the coating liquid, a portion of this coating will remain in contact with solids."

ASSIGNED TO GRASSELLI COMPANY

Method of treating ores, No. 1,153,203. This invention is by Louis C. Drefhal, of Cleveland, Ohio.

Mr. Drefhal claims to have invented a method of recovering metals, particularly zinc and silver, from ores in furnaces of the type at present in use, without the usual loss incurred, and the inconvenience to the operators.

Mr. Drefhal claims that by mixing the ores or concentrates, or metalliferous materials of the same general physical condition containing sufficient water to render them plastic, the fine particles of the powder are held together. The mass is then made into a granular or lumpy form, to make it possible to desulphurize, calcine or otherwise treat it. It is quite important that the size of the particles be not too large.

This patent has been assigned to the Grasselli Chemical Company, of Cleveland, Ohio.

ASSIGNED TO METALS RESEARCH CO.

Metallurgy of Copper, No. 1,151,236. This invention is by Raymond F. Bacon, of Pittsburgh, Pa., and is assigned to the Metals Research Co., of New York, N. Y.

It relates particularly to the recovery of copper from solutions of copper salts, such as are obtained by the lixiviation of copper ores and furnace residues by means of sulphuric acid, or such as are present in mine waters and the like.

The desired results are obtained by a process wherein hydrogen sulphid is produced by reaction, at a relatively low temperature, between sulphur and a hydrocarbon; by producing elemental sulphur by reaction between sulphur dioxide and a portion of the hydrogen sulphide, and by employing the remaining portion of the hydrogen sulphide for precipitating the copper, as copper sulphide, from the copper salt solution to be treated while regenerating the solution.

SUBDIVIDES COAL

Mining Machine, No. 1,151,383. This invention is by Edward O'Toole, of Gary, W. Va.

The object of this invention is to cut headings or passageways in mines, and when used in coal mines, of which the output is small or is of crushed coal, to subdivide and mine the coal, and thus save the expense of crushing.

Mr. O'Toole claims that this machine may be driven forward as fast as the material in

front of it is cut away. Also that it can be operated so as to remove the material from the entire extent of the opposing material at the end of a passageway, and that it has a self-contained conveying means for carrying away the broken material removed.

FOR PLACER MINING

Ore Separator, No. 1,152,351. This invention is by Charles H. Brown and Charles C. Parker, of Eureka, Utah.

The object of this invention is to provide a device whereby the fine gold in river and beach sands may be efficiently separated from the sand and recovered. The inventors claim to have a device comprising a casing having an air inlet and a material inlet in its upper end and a material outlet in its lower end, a rotatable spreader within the casing beneath the material inlet, a second casing disposed within the first casing beneath the spreader and having openings in its upper and lower ends, the lower end being in proximity to the lower end portion of the outer casing, and a suction device connected with the interior of the second casing.

Other patents granted were:

No. 1,151,234 to Raymond F. Bacon, Pittsburgh, Pa., Recovery of Cuprous Sulphide from Ores and the like; No. 1,151,448, J. M. Draper, Manchester, England, Fine Coal and Ore Separator; No. 1,151,722, Maxilian Schieshel, Frankfort-on-the-Main, Germany, Apparatus for Separating Minerals and Like Materials; No. 1,153,561, O. P. Moore, Spokane, Wash., Oil Burning Smelting Furnace; No. 1,153,700, C. O. Palmer, Cleveland, Ohio, Rotating Device for Rock Drill; No. 1,151,041, C. E. Morgan, Holden Okla., Mine Car Brake; No. 1,154,459, Benigno Viviani, Monessen, Pa., Mining Machine.

ELIMINATES PHOSPHORUS

Method of Treating Tungsten Ores, No. 1,153,594. This invention is by Frederick M. Becket, of Niagara Falls, N. Y., and relates to the treatment of scheelite or similar ores, concentrates, or ores of the calcium-tungstate type.

Mr. Becket states that scheelite and its concentrates often contain considerable phosphorus. It is usually impracticable to eliminate this phosphorus by an acid treatment applied to the raw ore, on account of the loss of tungsten which would be involved.

Mr. Becket finds that by subjecting the ore to a suitable temperature, as, for instance, a red heat, its tungsten-content is rendered nearly insoluble in certain acid reagents, including concentrated sulphuric acid, while the phosphorus remains in a soluble condition. The ore thus purified is smelted under proper conditions, and yields a metal or alloy commercially free from phosphorous. An example of this process is as follows:

The ore, in lumps or ground, is heated for some hours to redness, and after cooling, is mixed to a stiff paste with sulphuric acid, preferably concentrated, suitable proportions being two parts by weight of ore to one part

of acid. The mixture is allowed to stand for some hours, during which time some self-heating occurs. After this has subsided, the residue is washed with water until free from sulphuric acid. By this process the phosphorus is eliminated with practical completeness, without serious loss of tungsten.

VALUE OF OREGON DEPRECATED LESS THAN CENTURY AGO

New Jersey Senator Ridicules Idea of Making It Part of United States—Predicts as to Future of West

An idea of the tremendous progress made in this country in less than 100 years is obtained from going over old *Congressional Records*. For instance, on February 26, 1825, Senator Dickerson, of New Jersey, made a speech opposing a bill providing for the erection of a fort on Oregon River. Here is an extract from the speech of this man, who doubtless had a reputation in his day for remarkable foresight:

"But is this country of Oregon ever to become a state, a member of the nation? Never. The nation already is too extensive—and we must make three or four new states from the territories already formed."

The Senator then goes into detail to show the enormity of the distance, which separates the Capital at Washington from Oregon. He shows how it would take a whole year to make the trip on horseback. The quickest way of making the journey would be around Cape Horn, he pointed out. Then he remarks facetiously, "that probably the better way for an Oregon Senator to reach Washington would be to go around North America by way of Behring Strait. The fact that the passage through the Arctic has not been discovered is of little importance," exclaimed the Senator, "because it will be found long before Oregon becomes a state."

Another observation by this erstwhile sage of New Jersey was that the entrance of Oregon in the Union would weaken the nation and "whenever it acquires the importance of a state it will fall off from the nation by its own weight."

He then asks, "Is this territory to be a colony? Have we a surplus of population we want to send from our country?" Senator Dickerson states eloquently of the millions of acres within the boundaries of the nation that are crying out for tenants. "Why," asks the Senator, "should we send our people to the remote parts of the earth?"

The whole country west of Council Bluffs was declared to be so sterile and so devoid of wood and water as to make absolutely certain the conclusion that it never could be cultivated.

Another orator at the time, gave it as his opinion that the United States would be very glad in centuries to come that this great desert stretched west from Council Bluffs. It would protect the nation from whoever might settle in the wildness of the western mountains.

VALUABLE RECORDS TO HAVE SAFE HOUSING IN NEW BUILDING

Assignments of the space in the new building of the Interior Department have been made.

The Geological Survey will occupy the greater part of the front and middle wing of the new building. The Bureau of Mines also will have some of its offices on the front of the building and in the eastern wing.

For the past thirty years the Survey has been urging the construction of a fireproof building in which its records could be housed. These records are so valuable it is a matter of general surprise that they should have been endangered through all these years in buildings which are veritable fire-traps. Many of the records could not be replaced. They represent much of the work of a high-priced staff during thirty-six years.

A considerable part of the information which is collected by the Survey is not published. It is filed carefully, however, and is constantly referred to in the course of the work. All of the original notebooks of the field men are kept on file and much of the material is referred to frequently. The Bureau of Mines also has voluminous and valuable records which need fireproof protection.

The new building of the Interior Department will be a magnificent structure, built along businesslike and convenient lines, and will have a frontage of 400 feet, with three wings extending back 300 feet. It will be six stories high.

The offices of the director of the Geological Survey will be at the end of the center wing on the fifth floor. The offices of the director of the Bureau of Mines will be at the end of the eastern wing on the second floor.

One of the features of the building will be the room provided for the Geological Survey library. The library will be a single story in height and will jut out from the main building between the center and western wing.

The ceiling will be high and the building will provide for the orderly arrangement of 250,000 volumes on its shelves. In addition there will be ample space left for reading, research and work rooms.

The contract provides for the completion of the building by August, 1916. It is probable, however, that it will be January 1, 1917, before files and furniture can be arranged for occupancy.

FIELD WORK IN IRON DISTRICTS IS COMPLETED

Field work covering the iron districts of Tennessee, northeastern Alabama and northwestern Georgia has been completed by E. F. Burchard. A preliminary report on this work is available for distribution at this time.

Mineral Land Decisions

The Secretary of the Interior has reversed the decision of the Commissioner of the General Land Office in the McKittrick Oil Company case. The McKittrick Company appealed from the Commissioner's decision of March 27, 1914, which directed the institution of adverse proceedings against its mineral entry, for the California Oil Company, in Visalia land district, California.

The claim included an area of sixty-four acres. It is said to have been located originally September 19, 1899, and conveyed to the McKittrick Oil Company June 2, 1903.

A second location of ground was conveyed to the oil company by deed July 7, 1903. In December, 1904, the company presented an application for patent to the claim. The application was rejected by the local officers. This action, however, was reversed, and later the local office accepted the application.

PASSED TO PATENT

By decision of August 9, 1913, the Interior Department directed that the entry so allowed be passed to patent if the proofs were found to show satisfactory compliance on the part of the complainant with requirements of the mining laws.

Later a special agent of the Land Office submitted an adverse report upon the claim and the local officers were instructed by the Commissioner to proceed against the entry.

The Land Office charges that the first entry was made for the sole use and benefit of the McKittrick Oil Company, a corporation, through the use and employment, with their full knowledge and consent, of the names of the original locaters, the purpose being such device, fraud and concealment as to secure thereby, unlawfully, a greater area of mineral ground than may be embraced lawfully in a single location by a corporation.

Substantially the same charges were made with respect to the other claim.

COURT ACCORDS OIL COMPANY

In the case of Borgwardt v. McKittrick Oil Company, the court held, in effect, that the acts charged to the original locaters do not constitute a violation of any of the mining statutes.

The Department is of the opinion that this decision is sound. There is nothing disclosed in the report of the special agent or in any of the affidavits upon which such report is based which established as a result of a hearing and supported the charge that the locations in question were made for the benefit of any person or persons other than the original locaters, all of whom might have joined in the

making of a location without affecting its validity.

While no discovery of minerals within the limits of the claims is alleged to have been made until August 26, 1901, this fact did not effect the patentability of the claims.

In the absence of any reason other than those detailed in the report of the special agent, the Department is of the opinion that the entry should be passed to patent.

MAKERS OF PERMISSIBLE EXPLOSIVES ARE LISTED

Bureau of Mines Takes Steps to Acquaint Miners With Powders They May Use Safely

A list of the manufacturers of permissible explosives just has been published by the Bureau of Mines. The brand names on all explosives now considered to come under the classification of permissible explosive are given. The list is complete up to July 1, 1915, and is as follows:

Aetna Explosives Co., New York; Jefferson Powder Co., Birmingham, Ala.; Cameron Powder Mfg. Co., Emporium, Pa.; Atlas Powder Co., Wilmington, Del.; The King Powder Co., Cincinnati, Ohio; The Burton Powder Co., Pittsburgh, Pa.; High Grade Powder Co., Philadelphia, Pa.; Lowinite Explosives Mfg. Co., Pittsburgh, Pa.; Pennsylvania Trojan Powder Co., Allentown, Pa.; Hercules Powder Co., Wilmington, Del.; Illinois Powder Mfg. Co., St. Louis, Mo.; E. I. duPont de Nemours Powder Co., Wilmington, Del.; G. R. McAbee Powder and Oil Co., Pittsburgh, Pa.; Fort Pitt Powder Co., Pittsburgh, Pa.; Giant Powder Co., Giant, Cal.; W. H. Blumenstein Chemical Works, Pottsville, Pa.; Nitro Powder Co., Kingston, N. Y.

The classes of permissible explosives are described briefly. For instance, to class one, belongs all the explosives in which the characteristic material is ammonium nitrate. The class is divided into two sub-classes. One includes every ammonium-nitrate explosive that contains a sensitizer, that is itself an explosive. The other sub-class, includes every ammonium-nitrate explosive that contains a sensitizer that is not itself an explosive.

When fresh these explosives, properly detonated, have the advantage of producing only small quantities of poisonous and inflammable gases. They are adapted to mines that are not unusually wet, and also for mining and working places that are not well ventilated.

Similar descriptions are given for hydrated explosives, organic nitrate explosives, and nitroglycerin explosives.

PERSONALS

During the absence of Chief Geologist David White and H. D. McCaskey, the head of the Mineral Resources Division of the Geological Survey, E. F. Burchard has been acting in their places.

O. B. Hopkins, of the Geological Survey, spent his vacation at Harrisonburg, Va., last month.

Guy Mitchell, administrative officer of the Geological Survey, spent his annual vacation at Lovettsville, Va., during September.

T. P. O'Hara, secretary to George Otis Smith, of the Geological Survey, visited Montclair, N. J., as a part of his vacation trip.

E. S. Bastin has returned from six months in the field in the interest of the United States Geological Survey.

S. B. Flagg, fuel engineer of the Bureau of Mines, with headquarters at Pittsburgh, was in Washington last month conducting tests on coal destined for use by the Agricultural Department.

Dr. Charles L. Parsons, of the Bureau of Mines, will return from a Western trip October 10.

Prof. Charles A. Davis, of the Bureau of Mines, has returned from field work in Maine and Michigan.

J. M. Hill of the Geological Survey, has returned from a trip to New York on Survey business.

B. H. Lane, assistant editor of the Geological Survey, has returned from a vacation visit with relatives at Middletown, Ohio.

F. M. Bannon, topographical engineer, who has been extending triangulation for the Geological Survey in Idaho, is ill at Mackay, in that State. It was necessary to operate for appendicitis. He is now much improved, it is reported.

CALIFORNIA SHIPPING MAGNESITE TO EAST IN UNPARALLELED VOLUME

For the first time in the history of transcontinental transportation important movements of magnesite have taken place from California to Eastern steel works. It is promised that this business will continue in increasing volume.

Prominent among the shippers is Samuel Goldbier, Exchange Bldg., San Francisco.

BUREAU OF MINES WORKING ON BREATHING APPARATUS

Encouraging results are being obtained from tests being made by the Bureau of Mines of the oxygen breathing apparatus invented by W. E. Gibbs, of Columbia University, who was employed by the Bureau for this specific purpose.

Extensive tests of the apparatus just have been completed by Dr. Yandell Henderson, of the Yale Medical School, Chief Mining Engineer Rice, and other engineers of the Bureau, on Pike's Peak.

Mr. Henderson finds that a man can undergo almost normal exertion in the rare air of the high altitude by using the apparatus.

Patents on the breathing device are pending. Mr. Gibbs turns them over to the Government as fast as he develops them.

The Bureau of Mines is very anxious to perfect American breathing apparatuses which will answer all the requirements of mine-rescue work. At present the Bureau is dependent upon European manufacturers for this equipment. Owing to the war, difficulties have arisen in the delivery of the apparatus, which has emphasized the necessity of manufacturing it in this country.

EXPLAINS CHEMISTS' IDEA OF TRADE COOPERATION

A. H. Weed, Secretary and Counsel, Manufacturing Chemists' Association of Boston, Mass., explains the advantages of his bill providing for cooperation in meeting foreign competition, as follows: "Our association, upon request from Washington, prepared a tentative form of a bill necessary to permit the kind of cooperation contemplated. The bill is premised upon the idea that the law should give the absolute and unqualified right to American manufacturers to cooperate for export trade. The effect of such cooperation, whether it be by agreement, combination or association, is to be found primarily in the foreign markets where such agreements, combinations or associations are to be carried out. If the laws of the foreign country permit such cooperation and if our foreign competitors are all acting in combination, within these foreign markets, we should have the right to meet that competition on equal terms. In other words, our anti-trust laws should have no extra territorial effect.

"On the other hand, to prevent any abuses which might result from such cooperative movements, any retroactive effect which a combination might have to restrain trade in the United States, the bill has a provision granting power to the Federal Trade Commission, similar to the power which it now possesses, to restrain unfair methods of competition, under Section 5 of the existing law. The proposed bill, therefore, defines export trade on the one hand and trade within the United States on the other."

Quicksilver Report About Ready

A report upon quicksilver by H. D. McCaskey, of the Geological Survey, has been completed and will be published shortly.

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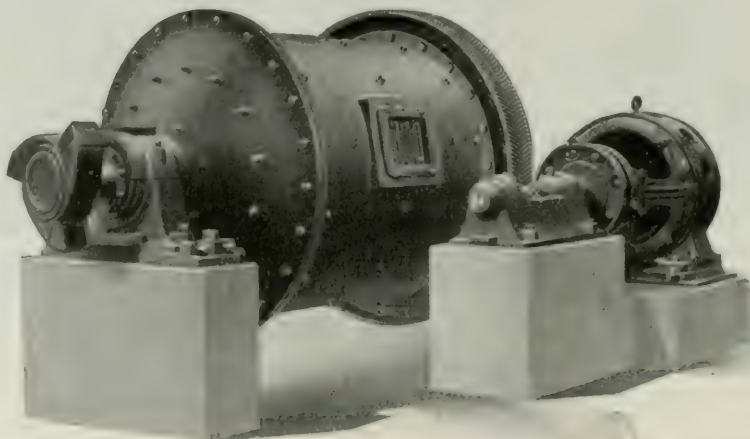
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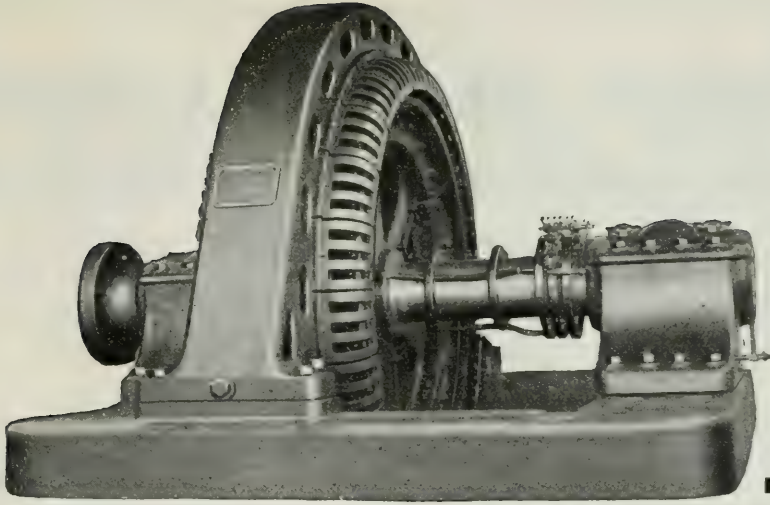
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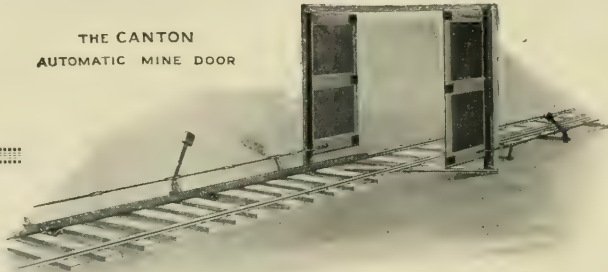
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CONTENTS

1915

Director Smith's Address.....	579	McCaskey Explains Grouping.....	602
Radium Work Ending.....	581	Molybdenum Reports.....	602
Platinum Embargo.....	581	Mineral Land Decisions.....	603
Lands Classified.....	581	Editorials.....	605
Revision of Mining Laws.....	582	Copper Treatment.....	608
Orofino Coal Field.....	582	Placer Mine Information.....	608
Radium Cures.....	582	Chemical Papers.....	608
Dust inside Motors.....	582	Geographers Make Trip.....	609
Guide Books.....	582	Talc Deposits.....	609
Alaska Prospers.....	583	Wenatche Wolframite.....	609
Cannel Coal.....	584	Structural Contouring.....	609
Uinta Mountains.....	584	Recent Legal Decisions.....	610
Manning Issues Statement.....	584	Director Smith Complimented.....	611
Engineers Meet.....	584	Few Traffic Complaints.....	611
Niter in Utah.....	584	Chemical Show Exhibit.....	611
Baltic Mining Case.....	585	Jeffrey's New Fan.....	611
Navajo Reports.....	586	Mining Patents.....	612
Petroleum Withdrawals.....	586	Traffic.....	614
Mora Diamonds.....	586	President Herty's Address.....	617
Bureau of Mines Complimented.....	586	Move to Washington.....	618
Employes in Coal Mines.....	587	Need of Copper Association.....	618
California Work Completed.....	587	Topographic Maps in War.....	618
Gilpin County Report.....	587	Gold Discovering Devices.....	619
Metal Producers Grateful.....	587	Gauging Stations on Columbia.....	619
Copper Report Complete.....	587	Opens Boston Branch.....	619
Supplies of Bulletins.....	588	Mendenhall-Boutell.....	619
Mining Motion Pictures.....	588	Outstanding Withdrawals.....	619
Round Mountain District.....	588	Early Geological Survey Work.....	620
Loco Gas Field.....	588	Commends Forest Service.....	622
Director Manning's Address.....	589	Big Horn Basin Work.....	622
White River Output.....	589	Study First Aid.....	622
Thanks Helmet Crew.....	590	Lost Quicksilver Mine.....	623
Designations for Entry.....	589	Gasoline Vapor.....	624
Senator Smoot's Address.....	591	Virginia Coal Field.....	625
Frank H. Short's Address.....	592	Classification of Waters.....	626
C. C. Dawson's Address.....	593	Rescue Practices.....	626
Coal in Wyoming.....	594	Geodetic Survey Ship.....	627
To Make New Cord.....	594	Mine Lamps in Use.....	627
Harnessing the Colorado.....	595	Safety First in Verse.....	627
Epsomite Deposits.....	596	New Technical Work.....	627
New York Mining Capital.....	596	Porcupine Dome.....	628
Potash at Marysvale.....	596	Lamps to be Approved.....	628
Cottonwood District.....	596	Ozokerite.....	628
Test Alaskan Streams.....	597	Arizona Asbestos.....	628
Barytes Industry Booms.....	597	New Jersey Geology.....	628
Discuss School Question.....	598	Platinum Thefts.....	629
First Aid Workers.....	599	Valdez District.....	629
Survey Publications.....	599	Dinosaur Monument.....	629
Radium Bulletins.....	599	Prince William Sound.....	629
Advertiser's Experience.....	600	Open for Homesteads.....	629
Brass in Shells.....	600	Personals.....	630
Reduction in Fatality.....	601	Inspects Field Work.....	630

The American Mining Congress

The American Mining Congress is a voluntary association supported by the dues and fees of its members. It is striving to bring about:

First—Safety and efficiency in mining operations.

Second—Intelligent conservation with a view to the highest development and use of our mineral resources.

Third—The stimulation of investment in practical mining operations by showing that mining is a legitimate business when intelligently conducted.

Fourth—Uniformity in state laws governing mining operations carried on under like conditions.

Fifth—Such federal co-operation through research and investigation as will furnish the basis for intelligent state legislation, and will solve those problems of economical production, treatment and transportation which are essential to an increase in mineral production.

Sixth—The improvement of the economic conditions underlying the coal mining industry.

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THE AMERICAN MINING CONGRESS

Munsey Building, Washington, D. C.

THE AMERICAN MINING CONGRESS

APPLICATION FOR MEMBERSHIP

.....191.....

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Every member of the Mining Congress should undertake to send in at least one application each month. Will you help by having the following blank filled in and mail to this office?

SUBSCRIPTION AND APPLICATION FOR ASSOCIATE MEMBERSHIP
IN THE
AMERICAN MINING CONGRESS

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SCENE AT THE BANQUET GIVEN BY THE AMERICAN MINING CONGRESS DURING ITS ANNUAL CONVENTION AT SAN FRANCISCO

THE MINING CONGRESS JOURNAL

Official Organ of the American Mining Congress

DIRECTOR SMITH OF GEOLOGICAL SURVEY MAKES PLEA FOR PLAIN WRITING

In Address before American Mining Congress He Tells of His Ambition to Have Reports of His Bureau in Language of the People—Says Science is Simple

Among other things in his plea for the use of popular language for the expression of scientific thought, Dr. George Otis Smith, Director of the Geological Survey, in an address before the American Mining Congress, said:

"It is our ambition that the reports of the United States Geological Survey shall be written in the language of the people.

"At its best science is simple.

"Scientific thought must be accurate and to the point.

"The reader often finds himself facing a 'no admittance' sign when he opens a scientific report.

"How common is the sad discovery that a piece of obscure writing is simply the product of roundabout reasoning and twisted thinking.

"Printer's ink is not a re-agent for clarifying muddy thoughts.

"Plain thinking must come before plain writing. There's the rub.

"The exploration, surveys and investigations of the Geological Survey are in the public interest only as results are made public."

Before a large and representative audience of the nation's mine owners and operators, Dr. George Otis Smith talked on "Plain Writing" at the recent convention of the American Mining Congress. His address in full follows:

Two years ago I spoke to the American Mining Congress on the subject Plain Talk—both preaching the use of direct statement and trying to practice what I preached. Of late my thoughts have turned more and more to the need of the use of popular language in stating technical results; hence this afternoon I venture to discuss plain writing from the standpoint of a Government scientist. For twenty odd years my association with scientists has been fairly intimate and though I may not qualify in plain writing myself, I can claim large acquaintance with both the written and the printed page whose meaning is far from plain.

SCIENCE IS SIMPLE

At its best, science is simple; for science is not much more than arranging facts so as to set forth the truth. Scientific thought is exact and direct, and scientific writing must therefore be accurate and to the point. The scientist should think directly and with the precision of one of the instruments of his trade, and above all his language must present that thought exactly.

In scientific writing this need of exact statement has led to the use of special terms, words that keep their razor-edge because used only for hair-splitting distinctions. In a certain degree this adoption of words not commonly used is unavoidable and therefore defensible. Yet, the practice is carried to an extreme and far too often the result is a highly specialized language so distantly related to our mother tongue that as a preliminary qualification the writer has to pass a civil service examination, and the reader usually finds himself 'shut out' and facing a 'no admittance' sign unless he happens to possess

the degree of doctor of philosophy in that particular branch of science.

NOT TO BE DISCARDED

Mind you, it would be folly to throw away these tools so well fitted for special purposes; yet it is no more the part of wisdom to put them to everyday uses. The task for the scientist is to decide when to use his technical terms and when to talk United States. Of course, any writer's first duty is to be intelligible. Choice of language thus resolves itself largely into an understanding of the audience. If a scientific investigator desires to announce his discovery to his fellow workers, he does well to use those exact terms that carry the same shade of meaning the world over and indeed may have the same form in several languages; if, on the other hand, his results have immediate value for the mine operator or the prospector, the geologist does not and cannot accomplish his purpose unless he writes in plain language, using words possibly less exact but surely more understandable.

It may be that I have stated the case too simply, so that this matter of plain writing may seem altogether easy, yet making out the prescription is always much easier than effecting the cure. Indeed, I suspect the difficulty is largely an internal trouble with the author, so deep seated that my simple remedy of fitting the language to the reader does not reach it.

Sir Clifford Allbutt in his "Notes on the composition of scientific papers" lays down the plain rule: "Take pains, therefore, with yourself first, then with your reader." His idea that clear thinking must be the first step to plain writing, of course deserves our endorsement, based upon experience. How common is the sad discovery that a piece of obscure writing is simply the product of roundabout reasoning or twisted thinking. Printer's ink, in whatever amount used, unfortunately possesses no magic properties as a reagent for clarifying muddy thoughts. Yet, no doubt it sometimes happens that some of us try to cover up with long words our uncertainty in thinking. So in preaching reform in scientific publications, those of us who are doing the work must realize that plain thinking comes first. There's the rub!

BIG MEN PLAIN WRITERS

It is therefore not a coincidence that some of the deepest thinkers in geological science have also possessed a literary style conspicuous for clarity of expression. On the other hand, some authors whose English needs the most editing are equally careless in their quotation of facts determined by others and indeed in the statement of their own observations. I mention this simply to show that I am strong in my belief that plain writing is not something beneath the plane of endeavor of the scientific investigator—indeed it is something so hard to attain that the most of us need to aim high, to raise our

standards of scientific thinking. The use of common words is worthy of any writer if his purpose is to transmit thought.

The discussion of plain writing at this time is not academic, because my real purpose is to take this opportunity to announce to you the policy of the United States Geological Survey on this subject. Our explorations, surveys and investigations are in the public interest only as results are made public. This policy is as old as the Geological Survey itself, but several things have given a special impetus to the development of this policy. Beginning in August a year ago a large volume of inquiries from producer and consumer of minerals came pouring into our office, and as never before the Geological Survey became a kind of "Central" to the mineral industry. This opportunity for a larger service to the public not only resulted in gratifying relations with a large number of correspondents, but the rendering of such service has proved instructive to the public servants charged with the duty. Many of us on the Survey staff have acquired a keener realization of the need not only of giving the public the facts, but also of making those facts intelligible and useful to the citizen who may lack professional training in geology or engineering.

THE GUIDE BOOKS

Another line of this larger service has been the issue of four guide books to this great Western country, in which the purpose has been to inform the traveler concerning the resources of this part of our country as well as to unfold to him in attractive form its fascinating geology. The effort to meet the public need of authoritative information of this type seemingly has met with success and other guide books in this series will follow in other years. More than that, however, the reflex influence of this innovation is already felt, and the evident appreciation by the general public of this type of popular description is encouraging the Survey writers. The educational responsibility of this Federal service is being more fully realized, and we intend to give much more attention to the simplification of the language of the professional publications and to the issue of reports that shall be popularly descriptive and instructive without loss of exactness. Even if plain language is used our reports should be no less efficient vehicles for professional discussion or for announcement of geologic discoveries.

FOR GENERAL PUBLIC

For thirty-six years the United States Geological Survey has reached an ever widening circle of readers and even in those first years of the Survey's life, Kind and Emmons and Gilbert gave to the West the results of their work in strong and forceful English. Yet with the growth of the organization and the development of the science, the tendency toward highly specialized writing has been too marked and the present plea for plain writing

has become necessary. The Government scientist has at least two obligations; first, that of making his investigations more and more exact in method and direct in result; second, that of making his product, the written report, such as to meet the needs of not only his professional associates but also the general public. It is our ambition that the reports of the United States Geological Survey shall be written in the language of the people.

RADIUM OPERATIONS OF BUREAU OF MINES TO END NEXT YEAR

Further complimentary reference has been made to the radium work being conducted in Denver by the Bureau of Mines by Dr. Charles L. Parsons, who just has returned from a trip through the West.

The largest single consignment of radium reached the Bureau of Mines the middle of last month. This shipment of radium is valued at \$48,000.

Owing to the condition of the roads and the inclement weather, Dr. Parsons was unable to take his contemplated trip to the radium mine at Paradox Valley. The mining practically has been completed. A total of 940 tons of ore has been extracted.

Work has been begun on the concentrating plant, which is being provided with dryers and mechanical carriers. All low-grade ores will be concentrated. All work in connection with the mining and concentration of low-grade ores will be completed early in the spring.

Approximately four and one-half grams of radium have been extracted at the plant.

The manufacturing operations of the National Radium Institute probably will cease in October of next year. Thereafter the plant will be sold or disposed of otherwise.

GEOLOGICAL SURVEY CORRECTS AN ERRONEOUS IMPRESSION

An impression seems to have been given considerable circulation in portions of Louisiana, Texas and Oklahoma that the presence of oil may be determined by analysis of earth. In order to counteract this erroneous idea the Geological Survey has made the following statement:

"Analyses of earth throw practically no light upon the question of the existence of oil or gas. The problem of finding possible oil pools consists in the location of favorable geologic structures, which require extensive study of the country and may or may not be attended with success. Oil and gas are sometimes found at the surface in connection with the salt dome fields of the coastal plains of Louisiana and Texas, but usually not in connection with the fields of north Louisiana, north Texas and Oklahoma. Asphalt is sometimes found in the Oklahoma fields."

STATE DEPARTMENT ASKED TO PROTEST PLATINUM EMBARGO

Consumers of platinum in this country are urging the State Department to protest against the embargoes on platinum being enforced by Russia and France. As yet England has not declared a formal embargo, but evidently action has been taken which is tantamount to an embargo. At least no platinum is reaching this country from England, and it is very evident that the intention is to allow none to come. The only hope seems to lie in the possibility of a protest by this Government.

Due to the war, all the Colombian production of platinum is coming to the United States. It is estimated that the 1915 output of platinum in Colombia will be nearly double that of any previous year.

This increase is due almost entirely to the work of the new American and English companies which recently have begun operations there.

The price of platinum from February to May fluctuated between \$38 and \$39 per ounce. From June to September the average was not over \$38 per ounce. In the second week in September, however, the price shot up rapidly. September 25 it reached \$50. Since then the price has remained at \$50 per ounce, and some sales have been recorded at slightly higher figures.

Consumers of this metal declare that possibility of any lower price is remote unless the arbitrary action on the part of the European countries is stopped.

LANDS IN POWDER RIVER BASIN ARE CLASSIFIED

Promising coal fields exist in the Powder River Basin of Wyoming, according to Ralph Howell, an assistant geologist of the United States Geological Survey, who has been assisting C. W. Wegemann in mapping this area.

The party consisted of six members, and began its work at Douglas, Wyo., in June. All of the work was done in the general area surrounding Douglas, Gillette and Caspar.

While the coal in this area is of good quality and exists in beds of considerable thickness, their distance from transportation facilities, and the absence of important markets means that their development is a matter of many years in the future.

The object of having a geological party in this field was to classify the lands so that homesteaders may get a clear title to those of the lands which are non-coal.

During the summer's work, Mr. Wegemann made a side trip to the Salt Creek oil fields, and recorded the development which has been done since the last report made by the Survey.

Owing to the absence of wood in this region, the ranchers are mining sufficient coal for their own use.

REVISION OF MINING LAWS TO BE URGED AT MEETING

Mining and Metallurgical Society Invites Mining Associations to Discuss Problem at Washington Convention

Various problems dealing with the revision of mineral land laws will be considered at a meeting of the Mining and Metallurgical Society of America which will be held in Washington, December 16.

Representatives from all the western associations and mining corporations have been invited to attend this meeting. The American Mining Congress has accepted an invitation to take part. It is expected that arrangements will be made whereby the well-organized legislative machinery of the Mining Congress may become even more effective with the cooperation of the Mining and Metallurgical Society.

The principal questions which will come up at the meeting will be discussion as to a reasonable term of years beyond which placer claims shall be immune from attack on the ground of fraud; full privilege of appeal in contests over location; recording of notices of mining locations so as to insure public notices; the abolishment of the law of the apex; the appointment of a government commission to investigate and make recommendations for the revision of the mining laws.

Previous to the meeting a committee will call upon the President to request that he make mention in his next message to Congress of the necessity of changes in the land laws of the United States as they affect mining locations.

GEOLOGIST SEES LITTLE PROMISE IN COAL FIELD

The inferior quality of the coal and the fact that extensive prospecting in the Orofino coal field has failed to reveal coal in commercial quantities suggest that the field will be of no importance as a producer of coal or lignite except in a very local way. It is questionable if any additional information regarding the coal or lignite possibilities of the general region of sufficient promise to justify further prospecting will be found, and Geologist Lupton, after an examination of the field, does not advise anyone to expend time and money in such work.

Installs Cabinet for Medals

A first prize blue ribbon and a gold medal were won by the Bureau of Mines exhibit at the International Soil Product's Exposition.

With the rapid accumulation of medals by the Bureau of Mines, it has become necessary to furnish a cabinet where they may be kept properly. For this reason it has been decided to install a handsome cabinet in the Bureau offices here.

NEW RADIUM CURES TESTED IN BROOKLYN

Dr. Chase Reports Successful Use in Many Cases—Corrects Anemic Condition

The Brooklyn Surgical Society heard with deep interest the report of Dr. Walter B. Chase, who described the recent uses of radium to treat suppuration and inflammation. He said after the meeting, "It is very satisfactory to see these cases recover in two or three weeks."

From the discussion it was evident that cases had been selected that offered so slim a prospect of safety in operation as to warrant any reasonable treatment the patient might bear—cases of extreme physical weakness or risk of fatal hemorrhage on the slightest movement of the tissue. No sensational statements marked the report. Discharging sinuses from bone conditions, tuberculosis sinuses, and tuberculosis inflammation of glands of the neck had responded quickly to the use of small doses of radium. Amounts of 25 milligrams were customary.

"The effect of radium is not that of a germicide," said Dr. Chase. "It is most effective in action upon the effects of staphylococci (bacteria-creating pus). Radium acts by changes upon the blood vessels, obliterating them or clogging their walls."

A Brooklyn radiologist was quoted as having said that radium acts upon the fluids of the blood, and that in these fluids subsequent changes called "anti-bodies" may be developed and be passed within the blood stream to other parts of the tissue and produce those results attributed to radium. Dr. Chase did not affirm this, or say why it might be, but he added, "It is known that the effect of the injection of radium compounds into the blood, intravenously, is followed by an increase in red blood cells. This opposes conditions of anemia." Cases of post-operative anemia were mentioned.

COAL DUST INSIDE MOTORS INCREASES EXPLOSION MENACE

Further investigation of questions with regard to explosion proof motors at the Bureau of Mines develops the fact that the presence of coal dust inside the motor increases the liability of explosion.

NEW GUIDE BOOKS REPRESENT MANY YEARS OF FIELD WORK

Press comment and a large number of letters received at the Geological Survey, indicate that the Union Pacific Guide Book, which is the first of the four to be issued, has proven very popular.

The Northern Pacific Guide Book is just out. The guide books covering the Santa Fe and the Coast route are on the press.

An idea of the amount of work represented by these books may be obtained from the fact that each ten pages of descriptive matter often represents an average of four years of field work.

ALASKA IS HAVING ONE OF MOST PROSPEROUS YEARS IN ITS HISTORY

Gold and Tin Output Will Be Greater Than Last Year—Copper Production Will Be Highest on Record—Antimony Being Shipped in Quantity—Promising Silver Property Opened

With the gold production of Alaska promising to exceed considerably the output of last year, with the copper production likely to exceed that of any other year in the history of the territory, and with exceptional prosperity in general mining and other activities, Alaska is having one of its best years, according to Alfred H. Brooks, in charge of the Division of Alaskan Mineral Resources of the United States Geological Survey, who just has returned to Washington after several months in the North.

High prices of antimony have stimulated the mining of this metal to a great extent, and large shipments have been made from the Fairbanks region. Some has been shipped from Nome, and antimony ore also is coming from the Canadian Yukon region.

Tin mining is continuing and the output promises to be larger than last year.

Mr. Brooks left Seattle July 15. He conferred with a number of the members of his geological field parties in southeastern Alaska. He reached Ketchikan July 18. He went through to Skagway and then down the Yukon. He was delayed at Dawson, but during the remainder of the trip to Iditarod made very good connections. He arrived at the town of Iditarod August 7, remaining there until August 17. He then went back up the river to the Hot Springs district, arriving there August 26. He left August 30 for Fairbanks, where he arrived the following day. He stayed there until September 17.

UNUSUAL RAINS

Mr. Brooks had to abandon his proposed trip to Valdez owing to the unusual rains, which made the wagon road impassable. Rains in this region in the fall are rare occurrences. On this account it was necessary for him to return by way of the Yukon.

At White Horse Mr. Brooks had a conference with D. D. Cairnes, the geologist in charge of Yukon territory for the Canadian Government. Considerable valuable information was exchanged. Here Mr. Brooks learned something of the new Mayo district, in which a valuable silver-lead vein has been opened.

Enough work has been done to establish the fact that a well-defined fissure exists. The ore occurs in shoots and is of high grade. It has been shipped in considerable quantities ever since the river opened this spring

It is understood that Thomas Aitken, an American, has purchased the property and is pushing the work on it.

Establishment of numerous wireless stations is proving a great boon to Alaska. The station at Iditarod is especially useful to the miners at that station. In addition to those of the War Department and Navy Department, there are various other stations in Alaska. All of the large canneries have erected stations at their plants and have equipped their fishing boats with wireless apparatus. The canneries are able to handle their business much more efficiently by the use of the wireless, as they are able to send their cargoes of fish to the point where they are most needed.

ABANDONS LAND LINES

So successful has the operation of the wireless been that the War Department is abandoning many of its land lines.

Alaska has had one of the hottest summers in its history. In addition there have been heavy rains this fall. As a result of the hot weather, the glacial streams were very high during the summer, and, following the fall rains, other streams were often at flood stage. On this account travel has been very difficult across country, and mining has been interfered with in some districts.

The automobiles have been making regular trips to Valdez and Chitna all summer and were stopped only temporarily during the heavy rains in the fall.

This automobile line, which has been in operation three years, has reached a stage of great efficiency, and has made possible a trip to Seattle in eight or nine days. This winter will be the first time auto trucks will have been operated over this route to carry mail. It is expected that they will be able to operate during the greater part of the winter.

MINING CAMPS BOOM

Mining throughout the entire territory is enjoying a period of great prosperity. With the low freight rates which have been arranged, the antimony mines are able to handle comparatively low-grade ore. While they perhaps would not be able to compete with the antimony production of the United States under ordinary circumstances, the demand for the metal is such as to make any supply readily salable at present.

On the steamer bound for Alaska in the early summer a young lady told one of the passengers that she hardly could wait to arrive at White Horse, her destination, because she was so anxious to have a ride on a sled pulled by a dog team. On her arrival at White Horse she found the temperature hovering around the ninety mark. Her idea of dog teams and sleds was lost in her desire to get into her baggage to extract a parasol and summer clothing.

Very satisfactory results were obtained by the field parties of the Geological Survey which were operating in the territory during the summer. While the swollen streams interfered with the movements of some of the parties, others were aided by the agreeable weather, with the result that the average of the work done is very satisfactory.

CANNEL COAL ATTRACTING INCREASING AMOUNT OF ATTENTION

Owing to a large number of requests which have been coming to the Geological Survey recently with respect to cannel coal, a special bulletin on this subject soon is to be published.

The work is in the hands of G. H. Ashley, who has had many years' work with this class of coal.

Cannel coal had its heyday previous to the bringing in of the Drake oil well at Titusville, Pa., in 1859. At that time it was being used as an important source of kerosene oil. Almost immediately after the bringing in of the first petroleum well its usefulness in this connection ceased.

There has been a steady but limited demand for cannel coal for use in grates and for a few special uses which require very small tonnage.

Cannel coal is full of gas and conditions are now such that it is believed it can be used profitably for distilling ammonia and gasoline.

To the requests which have been reaching the Geological Survey it has been possible to refer those making inquiries to only one article which deals comprehensively with cannel coal. This appeared in the *Mining World* in two installments, July 29 and August 7, 1905. The article was written by Dr. Ashley.

The price of American cannel coal at present varies from \$12 to \$15 per ton. The English production sells for \$18 per ton in the East.

GEOLOGY OF UINTA MOUNTAINS TO BE DISCUSSED IN REPORT

Work is continuing on the classification of phosphate lands in northeastern Utah and northwestern Colorado, at the eastern end of the Uinta Mountains. As soon as the data collected in the summer of 1915 can be compiled a report on the geology and mineral resources of the entire region will be published. This report will not be available before next summer.

MANNING URGES COOPERATION WITHIN BUREAU OF MINES

Shortly after taking charge of the Bureau of Mines Van H. Manning issued the following statement addressed to the members of the bureau:

"Through the efforts of Dr. Holmes the Bureau of Mines was established, and through his unceasing efforts to make it an agency for the increase of safety and efficiency in the mineral industries it has grown in public favor and has received increasing support. But the bureau would not have attained its present standing had not Dr. Holmes received the loyal cooperation of those who were laboring with him to make the bureau contribute more fully to the public good, and the list of these persons includes, I believe, every member of the bureau.

"In taking charge of the bureau, I freely acknowledge the inspiration I have derived from being associated with Dr. Holmes during the time that he was Director, and I shall constantly endeavor to make the bureau what he wished it to be. But as Director I shall have to rely on your loyalty, your cooperation, and your desire to advance the usefulness of the bureau. For this reason I hope that you will let me know promptly of any troubles or difficulties that arise in the course of your work, and will not hesitate to offer suggestions that you think will make for greater efficiency or will enable the bureau to be of greater aid to those whom it aims to serve.

"A vast field of usefulness lies before us. What the bureau has done is merely an evidence of what it can do. If its members continue to show the same high sense of duty, the same ambition and perseverance that have marked their work hitherto, the bureau will receive ungrudging support from the public and its influence for good will be felt throughout the world."

ENGINEERS DISCUSS PROBLEMS OF STREAM-GAUGING WORK

Engineers of the water resources branch of the Geological Survey held a conference at San Francisco during the week of October 18 and discussed the problems pertaining to the work of the branch. Twenty-five engineers from all sections of the country attended. As the stream-gauging work is conducted throughout the year from fifteen district offices, the field men have no opportunity for discussing improvements or proposed changes in instruments, equipment, or methods of work except at such conferences, which are held occasionally at Washington or at a convenient western city.

Niter Deposits Attract Attention

Niter deposits near Thistle, Utah, are attracting attention. Samples recently analyzed are said to have given very favorable results.

IS INCOME TAX LAW UNCONSTITUTIONAL AS APPLIED TO MINING COMPANIES?

Supreme Court of United States to Hear Arguments on This Question in the Case of John R. Stanton Versus the Baltic Mining Company— The Five Per Cent Clause

Owing to the proximity of the arguments before the Supreme Court of the United States in the case of John R. Stanton vs. Baltic Mining Co. *et al.*, some of the points involved in this case are of general interest.

One of the questions involved is whether the income tax law is unconstitutional as applied to mining companies.

It is agreed that the 5 per cent clause is unconstitutional and void, or that the income tax law as applied to mines is void. The reasons given for this conclusion are as follows:

The natural or necessary effect of the clause, when the real substance of things is reached, is to tax directly some portion of the company's principal as if it were income, without apportionment according to population, and, indeed, a very substantial amount of its capital assets.

It violates "due process of law" and "equal protection of the laws" in the following respects: because it is palpably arbitrary classification, for purposes of taxation, resting on no reasonable basis for distinction; because it cannot fairly be suggested that there is any "fair reason for the law that would not require, with equal force, its extension to others whom it leaves untouched;" because the classification and the purpose of the act, namely, the ascertainment of "net income" for purposes of taxation, must bear some "reasonable and just relation" to each other.

This classification of mining companies, as against other classes of corporations, rests wholly upon accidental, inconsequential differences which have no material or just bearing upon the purposes of the legislation.

A deduction from "gross receipts" can have no possible bearing on or relation to the purpose of the act, namely, to ascertain the tax "net income."

The act arbitrarily imposes one rule for valuation of income, or in effect, a different rate of direct taxation on one kind of business corporation and a different rule or rate on another kind.

The law does not apply equally to all within the same classifications, for it affects different corporations in distinct ways, mining companies being discriminated against, although in the class composed of corporations, all of which are under like conditions, so far as the same are material.

The taxation is especially discriminatory, unequal and arbitrary, when the effect on holding and operating companies is considered, amounting to double taxation, whereas all other corporations and all individuals, even individual shareholders in the same operating company, are subjected only to a single tax.

The \$4,000 exemption of individual incomes and the exemption of labor, agricultural and other organizations unlawfully discriminates against all corporations.

SMOKE TROUBLES CHECK SHASTA COUNTY OUTPUT

A visit to the Shasta County copper district was made recently by B. S. Butler, of the Geological Survey in company with Prof. L. C. Graton, of Harvard University. They visited the principal mines and made personal examinations underground in many of the properties.

The deepest mines in the Shasta County district are nearing the 500-foot level, but the average depth is considerably less.

Production in this region has not increased in recent years, due almost entirely to the fact that only one smelter can run on account of smoke troubles. Two large smelters are closed down on this account.

The Iron Mountain Co. has developed a considerable amount of chalcopryite concentrating ores for the treatment of which a mill using the flotation process was put in and operated during the summer.

Despite the inadequate smelter facilities, most of the mines are working full force.

At the Mammoth mine a considerable tonnage of zinc ore is being produced. This zinc was developed previously, but was left untouched in the mine until the recent increase in price justified its extraction.

In the same general region is the Bully Hill district, in which experimental work is being done with the electrolytic treatment of copper and zinc ores. Encouraging results are being obtained.

The operators in these districts are doing considerable development work within their mines and are taking up additional lands. They have splendid transportation facilities. Most of the properties are able to handle their ores by gravity a portion of the distance to the smelter.



ONLY A PART OF THE MEMBERS OF THE AMERICAN MINING CONGRESS WHO ATTENDED THE

GREGORY FINISHES REPORTS ON THE NAVAJO COUNTRY

Prof. Herbert E. Gregory, of Yale University, who has been doing some work for the Geological Survey for the past several years in the Navajo country, is in Washington putting the final touches on two reports. One will be published under the title of "Geological Reconnaissance of the Navajo Country;" the other, "The Navajo Country, Its Geography and Its Water."

The Navajo country as referred to by Professor Gregory, includes the area in Utah and Arizona between the Santa Fe R. R. and San Juan River, and between the Colorado and Little Colorado Rivers.

Professor Gregory has been granted a year's leave of absence from his chair at Yale. A part of this time will be spent in the West and the remainder in Australia. He goes to Australia to study the great desert which forms the central part of that continent.

He will investigate general physiographic conditions in a real desert, as they may be compared with the so-called deserts of the United States. This Australian trip will have a bearing upon the work Professor Gregory has been doing in the Colorado plateau country. While this trip is not being made directly for the Geological Survey, much of the research which will be conducted by Professor Gregory probably will find its way into subsequent publications of the United States Geological Survey.

PETROLEUM WITHDRAWALS AND RESTORATIONS IN NEW REPORT

A work which will contain all orders of petroleum withdrawals with restoration and classification from 1865 to November 1, 1915, is being prepared by the Geological Survey.

The report is to be entitled "Petroleum Withdrawals and Restorations Affecting Public Domain." It is by Max W. Ball and Miss Lucetta W. Stockbridge.

The work will be complete with township index, referring to all orders affecting each township. In addition there will be a chapter on the history and purposes of withdrawals and a chapter on the oil land laws.

There are 685 pages of manuscript in this report beside eight maps, which show the present outstanding withdrawals.

The report will not be ready before January 1. This is the most pretentious work

along this line ever attempted, and will fill a need which has been growing more urgent during recent years.

MORA DIAMOND NOT HIGHLY VALUABLE CLASS OF GEM

Inquiries recently have been made for definite information regarding the mora diamond. The Geological Survey has no definite information regarding this class of gem.

From another source it is stated that mora diamond is simply a pure colorless quartz. Its value after cutting would not exceed \$1, or at most \$2 per carat.

White sapphire is a colorless clear variety of corundum. It is found associated with other colored sapphires at different mines principally in Ceylon. A few stones which might be called white sapphires are found with variegated sapphires of Montana. It is probable that some of the stones sold as white sapphires are the synthetic variety made by fusing pure aluminum oxide. According to the Geological Survey, the value runs over \$7 per carat for the natural stone.

BUREAU OF MINES' GAS AND OIL WORK COMPLIMENTED

That the Bureau of Mines' work is appreciated by oil men is indicated by the following extract from a letter from Alfred J. Diescher, of the Wichita Pipe Line Company. The letter is addressed to the Secretary of the Interior, and reads in part:

"For some time we have been observing the work done in the oil and gas industry, and specially in the mid-continental field, by the Bureau of Mines, along the line of conservation measures, devices and policy; also in the general development of the industry, and we desire to express our appreciation of the excellent work being done by the Bureau of Mines and its great benefit to the industry.

"If there is any way we can cooperate to assist in this work we shall be pleased to do so at any time, and hope that the work now started by the Bureau will be extended in scope from time to time. There is no question of its great value and far-reaching good effect upon the entire industry both as to conservative and economic effect."



ANNUAL CONVENTION IN SAN FRANCISCO WERE PRESENT WHEN THIS PHOTOGRAPH WAS TAKEN

COAL MINES OF UNITED STATES EMPLOY 750,000 MEN

A greater number of men were employed in the coal-mining industry in the United States in 1914 than ever before. According to C. E. Leshner, of the United States Geological Survey, the total number of employees in both anthracite and bituminous mines for the first time exceeded three-quarters of a million. This record was made without sacrifice of efficiency, for although the average number of days worked in the bituminous mines was the smallest since 1896, except only 1908, and the average output per man for the year was the lowest in 5 years, the average daily production by each employee in 1914 was the highest on record in bituminous coal mining. This record is to be attributed not so much to the better character of the labor as to improved mining methods and the increased application of scientific management.

The number of men employed in the coal mines of the United States in 1914 was 763,185, of which number 179,679 were engaged in mining anthracite and 583,506 in mining bituminous coal and lignite. The average number of days of employment of each man was 207 for the United States, 195 for bituminous and lignite, and 245 for anthracite. In the bituminous mines the yearly average decreased from 837 tons in 1913 to 724 tons in 1914. The daily average increased from 3.61 to 3.71 tons. The average time made at the anthracite mines in 1914 was exceeded only by the records of 1911 (246 days) and 1913 (257 days). The average yearly production of anthracite by each employee decreased from 520 short tons in 1913 to 505 tons in 1914, owing to the fewer days worked. The daily output per man was 2.06 tons, a slight gain as compared with 2.02 tons in 1913.

WORK COMPLETED ON IMPORTANT CALIFORNIA QUADRANGLES

Important work in several quadrangles in northern California and southern Oregon was completed during last summer by J. S. Diller.

The Redding quadrangle is of particular importance on account of its copper deposits which are classed among the most important in the United States.

The Coos Bay quadrangle in Oregon is attaining more importance owing to the devel-

opment of coal on this section of the Pacific Coast.

The Orford quadrangle also is attracting additional attention owing to the increasing importance of the gold placers in this part of the Oregon Coast.

Mr. Diller also covered a much wider territory making investigations from an economic standpoint. He was assisted in a portion of this work by Prof. G. F. Kay, who recently has been made State Geologist of Iowa.

SEES AID FOR BUSINESS IN MINING CONGRESS JOURNAL

A. Cressy Morrison, Secretary of the International Acetylene Association, has the following to say of the MINING CONGRESS JOURNAL:

"Sometime ago I wrote you expressing my appreciation of the MINING CONGRESS JOURNAL. I desire to reiterate that appreciation. Under various headings, you seem to accumulate a vast amount of information, especially as to what the Government is doing for mining, and in these items can be found matters of immediate interest to almost anyone in active business."

PRELIMINARY GILPIN COUNTY REPORT GOES TO PRESS

E. S. Bastin, of the Geological Survey, just has sent to press a preliminary report on the geology and ores of Gilpin County, Colorado. It is probable that this report will be available for distribution in sixty days. It is an abstract of a complete professional paper on this subject which Dr. Bastin has prepared.

METAL PRODUCERS GRATEFUL FOR BUREAU OF MINES AID

A well-worded letter of thanks written by the California Metal Producers Association has been received by the Bureau of Mines. The Metal Producers are very grateful to the Bureau for its assistance in the recent field meet at San Francisco.

Copper Report Complete

The general Geological Survey report on copper by B. S. Butler has been completed and will be ready for distribution within a few weeks.

SUPPLIES OF BULLETINS TO BE SENT MINERS' ORGANIZATIONS

In order to circulate more largely certain bulletins of the Geological Survey which are of special interest to mining men, arrangements can be made to send fifty copies of each of the following bulletins to the secretary of any State chapter of the American Mining Congress, secretary of any miners' club or other miners' organization. Single copies will be furnished individuals, but the fifty copies will be sent only to organizations of mining men.

In addition to the list given below, other bulletins will become available from time to time, to be distributed in the same manner. Those ready for distribution at present are:

Contributions to Economic Geology. Metals and Nonmetals except Fuels, by David White. Bulletin 540.

Ore Deposits in Northwestern Custer County, Idaho, by Joseph B. Umpleby. Bulletin 539.

Contributions to Economic Geology. (Short papers and preliminary reports.) Mineral Fuels, by Marius R. Campbell. Bulletin 541.

Contributions to Economic Geology. Mineral Fuels, by Marius R. Campbell. Bulletin 531.

Contributions to Economic Geology. Metals and Nonmetals except Fuels, by Waldemar Lindgren. Bulletin 530.

MINING ENGINEERS ALSO DO GENERAL DRUG BUSINESS

A certain firm advertises as Chemists, Perfumers and Mining Engineers. Claims made in the announcement are: "Specialists in toilet lines," "Mining properties examined," "Assaying," "Antiseptic lotions compounded."

It may be stated in this connection that this firm actually exists and is serious in its combination of activities.

NEW MOTION PICTURE FILMS ADDED TO COLLECTION

Splendid results are being achieved by the Bureau of Mines through the extensive exhibition of its motion picture films. Two new films just have been added to the interesting collection already owned. The new films are entitled "Social Welfare, or the Human Side of Mining," and "Sanitation of Mining Villages."

The first film portrays the life of a miner when not in the pit. It dwells on his pleasures and touches his sorrows. The activities of a mining village are shown. An inning of baseball between miners' teams is shown. A violent handball contest brings plenty of action into a section of the film. A boxing match is full of interest. The village brass band giving a concert and a club room scene show the interest in these features.

In addition, the workmen are shown how to dress wounds, and a vivid mine rescue scene is shown. The children's playground with

two giant swings, coaster and sand box, flashes on the screen. A fire drill in a modern schoolhouse is an interesting feature. The Camp-fire Girls and a girls' basketball team come in for attention. The celebration of a public holiday with its parade, races, target practice and efforts to climb a slippery pole also are shown.

In the second film are shown: Sanitary wash and change house; sanitary bath; carrying water to the pump; sanitary outbuildings; danger of the fly and mosquito; model dairy and model houses for miners.

GEOLOGIST FINDS ROUND MOUNTAIN MINING DISTRICT INTERESTING

Interesting communications from H. G. Ferguson have reached the United States Geological Survey, with respect to the Round Mountain mining district of Nevada. Mr. Ferguson recently suspended temporarily his detailed work at Manhattan, Nev., in order to make a study of Round Mountain and the intervening country.

He found the Round Mountain mine of the greatest interest and expects his study to develop matters of considerable geological and economic interest.

R. H. Ernest, manager of Round Mountain mine, has an extensive collection of free gold in quartz. Through Mr. Ferguson a number of these were sent to the Geological Survey that specimens might be detached.

Mr. Ferguson also examined some tungsten prospects in the vicinity of Round Mountain. Before returning to Manhattan he will make an examination of the Golden Arrow district which is 40 miles east of Tonopah. This district recently has begun shipping ore and is attracting considerable attention.

EXTENSIVE GEOLOGICAL WORK FOR MT. RAINIER PLANNED

During his recent trip through the West, Dr. George Otis Smith, director of the United States Geological Survey, planned for extensive geological work on Mount Rainier, Washington.

He visited field parties in Texas, Nevada and California. He also visited the office of the Survey in Salt Lake City and San Francisco.

The principal object of the trip, however, was to deliver an address at the annual convention of the American Mining Congress.

While in San Francisco, Dr. Smith attended the conventions of the American Institute of Mining Engineers and the International Engineering Congress.

Report on Loco Gas Field

A report on the Loco gas field of Oklahoma just has been prepared by the U. S. Geological Survey and the Survey of Oklahoma. Each organization furnished a portion of the funds for the work. This gas field has a promising future, judging from the statements made in the report.

UNCONDITIONAL COOPERATION WITH BUREAU OF MINES PROMISED IN WEST

Director Manning Greatly Pleased with Friendly Attitude of Owners and Operators
Met on Recent Trip to California and Other States—
Guest of Montgomery

If there were any doubt that the Bureau of Mines is to enjoy willing cooperation on the part of mine operators, it would have been dispelled on the recent trip through the West made by Van H. Manning, director of the Bureau.

Mr. Manning went to San Francisco to deliver an address before the American Mining Congress. This address appeared in full in the October issue of the MINING CONGRESS JOURNAL. While in San Francisco, Mr. Manning attended the other engineering conventions which were held at about the same time.

This trip gave Mr. Manning an opportunity to meet a very large number of mine operators not only in San Francisco but at the frequent stops made on the trip West and on his return.

Any feeling that may have existed in the past that the Federal Bureau might prove to be a busy-body which would work out impossible schemes and hamper the industry rather than benefit it, has been dissipated entirely, if the general expression of mine owners met on this trip is taken as a criterion of the opinion of the entire industry.

RECOGNIZE A REAL SERVICE

The feeling so freely expressed to Mr. Manning was one which looks to full cooperation with the Bureau of Mines. There seems to be a general realization that the work of this Government agency is being conducted on a highly intellectual plane, with such regard to practical questions as to make it a service to all interested in mining.

One of the things which impressed Mr. Manning most forcibly was the showing made at the field meet September 22, 23 and 24. This included mine-rescue and first-aid contests. Miners came from all parts of mining territory. Alaska, West Virginia and other points far distant from San Francisco were represented.

Mr. Manning was impressed that 200 miners were entered in these contests, and was surprised at the amount of interest displayed in striving for the forty-five prizes which were offered winning teams. It demonstrated to the director that the whole mining industry is taking active interest in this work, which has been one of the principal aims of the Bureau since its founding.

INTEREST IS GENERAL

Mr. Manning was gratified particularly at the undisputed evidence of the interest being

shown by both operators and miners. The fact that many of the operators gave the members of the teams double time, traveling and miscellaneous expenses is one evidence of the interest they feel. On the other hand, some of the miners participating in the contests paid all their own expenses occasioned by the trip to San Francisco.

The fact that President Moore, of the Panama-Pacific Exposition, and a great concourse of spectators attended the field meets indicates the amount of popular interest in first-aid and mine-rescue work.

On the way to San Francisco Mr. Manning was the recipient of various courtesies from mining men in different points en route, particularly at Chicago and Salt Lake City.

After leaving San Francisco, he went to Los Angeles, where E. A. Montgomery tendered a banquet to Mr. Manning, Carl Scholz, newly re-elected president of the American Mining Congress, and George S. Rice, chief engineer of the Bureau of Mines. Here thirty prominent mining men of southern California were introduced to the guests of honor, and very instructive talks resulted.

VISITS UNIVERSITY

From Los Angeles, Mr. Manning went to Tucson, Ariz., at the request of the University of Arizona. While here Mr. Manning was made familiar with the reasons why Tucson thinks it should be the site of one of the ten mine experiment stations authorized at the last session of Congress. Mr. Manning had a record made of the reasons advanced and will give it careful consideration.

As a guest of the officers of the Copper Queen Consolidated Mining Co., Mr. Manning visited Bisbee. He spent a day at the mine and a day at the metallurgical plant at Douglas.

In order to inspect the plant of the Bureau of Mines at Denver, Mr. Manning visited that city, and made a careful personal inspection of the work in progress.

Gold Output \$250,000

Placer gold was first mined in the Chisana-White River district of Alaska, in 1913, when between \$30,000 and \$40,000 was recovered. Last year over twenty claims contributed to the production, and gold to the value of more than \$250,000 was mined.



UTAH FUEL CO.'S SUNNYSIDE NO. 2 TEAM

Winners of Mine Rescue Contest at Panama Pacific International Exposition 1915. Left to Right: Rear, M. H. Detweiler, Captain; Zeph Thomas, T. J. Johnson, George Usher; Front: George Clark, J. W. Littlejohn

SUPERIOR FUEL COMPANY THANKS HELMET CREW

Work on the part of the Bureau of Mines helmet crew in the mine of the Superior Fuel Company, of Russellton, Pa., has called forth the sincere thanks of the company.

The mine had been sealed on account of fire. It was the opinion of the officers of the company that the fire was out, but they could not be certain. They knew the mine contained 20 per cent of marsh gas and feared to open the mine lest a smoldering fire might flame up with the entrance of oxygen.

The matter was taken up with the Bureau of Mines and the helmet crew was sent to Russellton. The crew went into the mine 2,400 feet in advance of the air and could find no evidence of heat. They took samples of the gases and analyzed without doubt. In this way they established without doubt the fact that the fire had been put out, and the property has been reopened for operation.

NEARLY 1,500,000 ACRES DESIGNATED FOR ENTRY

Nearly 1,500,000 acres were designated for entry under the enlarged homestead act during September. This includes 434,000 acres in Idaho, 123,000 acres in Montana, 365,000 acres in New Mexico, 352,000 acres in Oregon, 142,000 acres in Wyoming and 18,000 acres in Kansas.

The number of requests to designate lands for entry received during September were 1,486.

With the limited force available for this work and the extreme complexity of some of the problems involved, it was possible to act upon only 850 of the petitions received.

In all there are more than 5,000 petitions awaiting action. It is necessary to group these petitions in areas so that those coming under the same general conditions may be considered at the same time. As the Land Office, which also has to handle these petitions, handles them in land districts, the Geological Survey attempts to group them in the same way.

POWER TO REGULATE USE OF WATER BELONGS TO STATES, SAYS SENATOR SMOOT

Utah Lawmaker Declares Amendment to Constitution Will be Necessary to Carry Out Government Policy as to Water-Power—History of Fundamental Law Reviewed

Reed Smoot, United States Senator from Utah, delivered an address before the Portland Water Power Conference which is classed by many as one of the most able works yet to appear on the subject of a federal tax on water powers.

A portion of this address follows:

Before the adoption of the Constitution of the United States and the inauguration of President Washington, this country did not have in a true sense a national government. The actual governments were the governments of the thirteen original States. For purposes of defense against British oppression there was, indeed, among these States a union and interdependence of action which were finally and formally announced to the world in the Declaration of Independence, and gloriously achieved by the War of the Revolution.

Subsequently, under the articles of confederation, an effort was made to provide a form of government for this union; but it signally failed, for the simple reason that the chief powers of government, of sovereignty, of a jurisdiction, of eminent domain in a broad sense, were withheld from it. Chief among these powers, the lack of which well nigh reduced the confederation to impotency and dissolution, were the powers to raise money by taxation and by loans on the credit of the United States, and the power to regulate commerce with foreign nations and among the several States.

A LEAGUE; NOT A NATION

In fact, the articles of confederation created a league of sovereign States and not a nation. Its Congress, as the name originally implied, was an assembly of delegates from the States. It was deliberate and advisory, rather than a legislative body. It could make requisitions upon the States, but it had no power of collecting them. It could not act directly upon individuals at all. It remained, therefore, for the Constitution to create the nation as an entity, and to provide for it a national government with sovereign powers.

It is very interesting and important to note that the first effective step which led to the calling of the Philadelphia convention which framed the Constitution was a meeting of commissioners of the States of Virginia and Maryland at Mount Vernon in 1785, for the purpose of settling "the jurisdiction over waters dividing the two States."

This was followed in 1786 by a resolution

of the Virginia legislature proposing a meeting of deputies from all the States to discuss the best means of securing a uniform treatment of commercial questions.

MADISON'S COMMENT

Pursuant thereto a convention attended by deputies from only five States met in the fall of 1786 at Annapolis; and, in the words of Mr. Madison, this convention "then as it was, did not scruple to decline the limited task assigned to it, and to recommend to the States a convention with powers adequate to the occasion."

As you all know, it was in conformity with the call of the Annapolis convention, drafted by Colonel Hamilton and unanimously agreed to, that the great convention met at Philadelphia in 1787 and evolved the Constitution under which we live and have grown to be the foremost nation in the world.

The purpose of that convention in framing the Constitution and of the people of the States in adopting it, as declared in its preamble, was to form a more perfect union, establish justice, insure domestic tranquillity, provide for the common defense, promote the general welfare and secure the blessings of liberty to themselves and their posterity. In order to carry out these purposes the States and their people delegated to the general government certain powers of a national character, and expressly declared that the Constitution and the Laws of the United States made in pursuance thereof, should be the supreme law of the land. Of necessity, and by the express terms of the tenth amendment, the powers not delegated to the United States by the Constitution nor prohibited by it to the States, are reserved to the States respectively, or to the people.

There was thus created a dual form of government, federal and State, each sovereignty operating directly upon the same individuals—a thing unknown before in the world's history. To preserve that form of government in its integrity, both as respects the States and the nation, should be the prayerful purpose not only of our statesmen but of all patriotic citizens. It is a sacred heritage, transmitted by us in all its vigor and glory to our posterity.

UTAH'S PROVISION

The constitution of my own State of Utah contains a declaration that "frequent recur-

rence to fundamental principles is essential to the security of individual rights and the perpetuity of free government," and that of the Commonwealth of Massachusetts likewise declares that "frequent recurrence to the principles of the constitution is one of the things absolutely necessary to preserve the advantages of liberty and to maintain a free government."

The first of the enumerated powers of Congress under the Constitution are the power to raise money by taxation and loans, and the power to regulate commerce—powers, the lack of which rendered the old confederation lame and impotent.

Ever since the decision of Chief Justice Marshall in the case of *Gibbons against Ogden*, to the effect that the power delegated to Congress to regulate interstate commerce comprehended the power to regulate and control navigation, notwithstanding the laws of any States to the contrary, there has been no doubt whatever concerning the power of Congress over the navigable waters of the nation for that specific purpose. But the power to regulate and control the appropriation and use of water for all other purposes, inherent in the States, and not delegated to the United States by any provision of the Federal Constitution, still resides in the several States, and, in my humble opinion, they can only be deprived of this power by an amendment of the Constitution.

DISCUSSES FERRIS BILL

Frank H. Short Talks on Its Constitutional Aspects at Water Power Conference

Just how unfair the Ferris bill is to the West was brought out in a striking manner by Frank H. Short, of California, in an address at the Portland Water Power Convention. Extracts from this address follow:

Probably the most important provision of the Ferris bill is contained in Section 8. That is to say, with respect to the workability of the bill and the development of industry and its ultimate effect upon the States.

This contains the provision "That for the occupancy and use of lands and other property of the United States permitted under this act, the Secretary of the Interior is authorized to specify in the lease and to collect charges or rentals for all land leased, which charge or rental may in the discretion of the Secretary of the Interior be measured by the power developed and sold or used," etc.

Following this is an exemption for power used in operation, and a provision that 50 per cent of the revenue that is obtained shall be paid to the State, and later, a provision for the use of the other half for the reclamation purposes of the United States. And with a further provision that leases for the

development of power by municipal corporations for municipal uses shall be issued without rental charge.

INCONSISTENCY SHOWN

We have been very earnestly assured that these rentals will be insignificant and unimportant, but as a very great favor to municipal corporations, they are to be exempted from paying a rental charge of no real importance to anybody. But the consideration that interests me is that under this law, regardless of the value of the right of way or its rental value, the Secretary of the Interior may measure the rental by the power developed, which rental when so measured might be ten times or a hundred times or a thousand times as great a rental per annum as the entire value of the right of way leased from the United States.

If such an authority can be conferred upon an individual official or if such a charge can in any way be imposed for a use of a right of way, measured by the power developed, then a corresponding authority can be given to impose a charge for the lease of a right of way for tonnage shipped over a railroad or for freight transferred over a highway, or for irrigation water transported through a ditch, and the equality of right and opportunity and of taxation guaranteed to all of the States will stand effectually repealed in every one of the public land States.

A statement of the proposition is sufficient to discredit it with any person having an elementary knowledge of constitutional principles and constitutional right.

AN ILLUSTRATION

It has been found quite sufficient to promote the policy in the East upon the theory that it is for the benefit of all of the people of the nation, and in the West upon the theory that it is exclusively for the benefit of the people of the public land States. In this connection I desire to repeat an illustration which I first publicly stated at the Conservation Congress in St. Paul, as follows:

"We assume that Uncle Sam is the father of four sons, and for the purposes of historical and geographical accuracy we refer to them as East and North and South and West, and Uncle Sam, being mindful of a trust and generous to a fault, has proceeded to distribute to East and North and South, who are the elder children, that portion of his magnificent estate and domain that pertained to them. Whether this was done wisely or otherwise we are not here discussing. It is sufficient to say that it has been done, and that at the time it was done that portion of the common property that pertained to the estate of the younger brother, West, was supposed to be of little value.

"But the younger brother, being resourceful and industrious, has demonstrated the value, the potential power and the taxable resources of his leftover and supposedly arid portion of the public domain. That it was not until this situation developed that a

great idea of regeneration and moral uplift seized the minds of East and North and South. And the more they thought about it, the worse they apparently felt about it.

"Finally, our brethren went to Uncle Sam and said, 'Father, in the distribution of that portion of your estate which you have distributed to us and to our children, you have greatly impaired the family estate and inheritance, and you have sinned against Heaven and in the sight of all men, and we can suggest no adequate atonement or reparation except that you shall now seize, take and hold all that portion of your estate that was supposed to belong and descend to our younger brother, West, for the benefit of the whole family.'"

THE HONEST WAY

Assuming that we should propose now to amend the Constitution to fit the situation, it would necessarily be provided about as follows:

"The rights of each and every one of the States to this Union shall be equal, and all States admitted to the Union shall be admitted of equal right, opportunity and authority in all respects whatsoever with the original States; excepting and providing, however, That in those States wherein there is or may be situated lands belonging to the United States, that within such States and with respect to the use of ways and easements thereover and the development of the industries thereon, the United States Government may as to the industries so located and as to the people owning or operating the same, exercise such exceptional power and impose such exceptional charges upon and conditions connected with such use and enjoyment, and impose such restraints over such industries, and exercise such governmental and regulative authority thereover and within such States, as in the judgment of the United States and its officials shall be beneficial and proper."

It is very interesting to consider that no one would probably suggest or advocate this or any similar amendment, and yet by indirection we appear to be very ready to violate the principles of the Constitution, where nobody would advocate a direct amendment legitimately permitting the same thing.

This fight is upon principle and not upon policy, and it is going to go on until all unrepresentative, unconstitutional and unequal government is dead in this country, and I hope to live long enough to see this doctrine that reflects upon the western people and the western States, and questions their capacity for self-government, equally with all of the other States, taken out and buried in some good, old-fashioned cemetery, in the good, old-fashioned way, under the sod and the dew, there to await the wrath of God and the Judgment Day.

SPEAKS AGAINST BILL

Clyde C. Dawson Urges that Decided Stand be Taken on This Class of Legislation

Clyde C. Dawson, of Denver, spoke on Ideal Conservation, at the Water Power Conference. In part he said:

My objections to the Ferris bill go deeper than to any specific provisions of the measure. Its whole tenor is contrary to the spirit of our free institutions and of our fundamental laws. In its present form it is obvious, and hardly needs the testimony of practical men, that the bill will not encourage investment and development; but it is equally obvious, and should be recognized by every citizen, that the exercise of such powers by the Federal Government within the public land States tends to reduce those States to mere provinces and to sap and undermine the very foundations of our Union.

I well realize that there are some gentlemen interested in power companies who are extremely desirous of having Congress pass some bill under which they may reap the profits of financing and promoting these enterprises. But this is not a question to be determined and settled by arrangements made and entered into between the power companies and the administrative officials in Washington. It is a question which concerns all of the people, and no legislation should be countenanced which tends to break down our constitutional form of government. The question involved is one which concerns the conservation of the Constitution itself, and the rights and liberties of all the people.

WILL NOT PRODUCE RESULTS

The advocates of this class of legislation may say that the criticisms by its opponents offer nothing of a practical nature in the place of the program which they are seeking to carry out. The professed purpose and aim of all are, indeed, identical—to provide for the broadest possible development of the water power resources of the country. All unite in saying that this is ideal conservation. We think we have sufficiently demonstrated that the methods of the Ferris bill will not produce the desired results. And when they ask us what we would substitute in its place, our answer is, that the existing acts of Congress, properly construed, permit the development of these resources under the control and regulation of the local laws; that there should be no legislation which does not recognize and reaffirm the fundamental principle that the States have the right and authority to control their own purely internal affairs, and that the title to the public lands is held in subordination to this rule of law.

SHOULD AWAIT COURT ACTION

These very questions are now pending in the Supreme Court of the United States, the

only final arbiter under the Constitution. Why should Congress now seek to make the confusion, brought about by administrative misconstructions, worse confounded by assenting to that misconception?

There are many of our ablest living statesmen who now contend, as was contended years ago by Jackson, Benton and others, that the proper solution of this question is for the Federal Government to turn over to the States the title to all the remaining lands within their borders. In 1833 President Jackson said in a message to Congress:

"On the whole, I adhere to the opinion expressed in my annual message of 1832, that it is our true policy that the public lands shall cease as soon as possible to be a source of revenue, except for the payment of those general charges which grow out of the acquisition of the lands, their survey and sale. I do not doubt that it is the real interest of each and all the States in the Union, and particularly of the new States, that the price of these lands shall be reduced and graduated, and that after they have been offered for a certain number of years, the refuse remaining unsold shall be abandoned to the States and the machinery of our land system entirely withdrawn."

However we may view this solution of the question that is a matter that rests with Congress. But the jurisdiction over the public lands within the States is vested in the States not by virtue of any act of Congress, but by the fact of their being States of the Union, and by the express terms of the Federal Constitution.

INCREASED COAL TONNAGE TO BE MINED IN WYOMING

Union Pacific Railroad Doing Active Work In Hanna District of Carbon County

Field work in the Hanna coal area in Carbon County, Wyoming, has been completed by C. F. Bowen, of the Geological Survey.

It is in this field that the Union Pacific Railroad has important mines and, in fact, this company is doing all the mining now in progress in this region.

The railroad company is operating four mines, three of which are being conducted on a large scale. Mining is being done on two beds of coal which are 1,500 feet apart, stratigraphically.

In addition to these two beds, there are a great many others in the field, some of which are as thick as those now being worked, and which are wholly undeveloped.

It is the opinion of Mr. Bowen that there is room for a decided increase in coal mining in the Hanna field. There is plenty of opportunity for the entrance of private companies. Most all of the territory, except the

original grant to the Union Pacific, is public land. It is understood that the Union Pacific has bought up little land outside of its original grant. This leaves plenty of vacant land and plenty of coal for other companies if any should desire to enter the field.

The Union Pacific, in addition to supplying its own needs, is retailing a small amount of coal, which is being sold at reasonable prices.

The coal of the Hanna district is a high-grade subbituminous coal. It is very soft and slacks readily. It will not stand storing well. It is very light and blows away under forced draft, which reduces its efficiency for use in locomotives or under the average commercial boiler.

As a domestic fuel it is greatly in demand, as it gives a quick heat and holds fire well. Owing to its tendency to spark, the use of this coal has caused numerous fires, especially along the railways.

Mr. Bowen mapped three quadrangles this summer, including most of the Hanna region which takes in practically all of the important coal deposits.

Some drilling is being done for oil in the Medicine Bow, Wyo., region. One well was drilled about ten miles south of Medicine Bow and it is reported that some oil and gas were encountered. Definite information as to the amount is not available.

The structure and the geology are favorable to the occurrence of oil, but there are no surface indications of its presence.

Considerable oil excitement is in evidence at Kindt Basin and at Eight-Mile Lake, near Rawlins, Wyo. Some oil has been found at Eight-Mile Lake, but information as to the amount is not obtainable.

This same general region is rich in gypsum. It is being mined in the Laramie Basin. It also produces a clay which is being used in filling paper and as an absorbent.

WIRE MANUFACTURERS JOIN IN EFFORT TO MAKE NEW CORD

In order to develop a more serviceable cord for portable electric gas lamps, the Bureau of Mines has obtained the cooperation of six large electric wire and cable manufacturers in an effort to develop a better cord than now is on the market.

Each of the manufacturers will make up a cord, which will be tested by the Bureau in order to see which is best suited for mining service.

Mining Congress members are requested to advise the Washington office of any change of address. Copies of the MINING CONGRESS JOURNAL are being returned for want of a proper address. This applies to some of the first-class mail addressed to members.

HARNESSING OF COLORADO RIVER NOW IS ONLY MATTER OF MONTHS

First Big Dam Is Being Arranged for near Peach Springs, Ariz., Just below the End of the Grand Canyon—First Unit Will Develop 50,000 Horsepower

By H. J. MINHINNICK

A development of most vital importance to nearly every mining interest in Arizona and Southern California is the proposed harnessing of the Colorado River and the furnishing of electric power to all mines and camps within the radius of possible service.

From source to mouth the Colorado falls a distance of more than 8,000 feet and its mean annual discharge is given by the Geological Survey at 30,000 second feet. The possible horsepower that could be generated if all the flow were usable would thus be in the neighborhood of 20,000,000 or enough to turn practically all the wheels of every industry in the nation.

Several things have conspired to prevent the use of this great natural source of power. First, the river is largely inaccessible, there having been found but six good dam sites on the entire length of its upper course. Second, it is subject to terrific floods such as that which, in 1891 broke through the banks of the lower reaches of the river and formed the Salton sea.

MUST HANDLE RISES

To make the power available there were required the finding of suitable dam sites and the building of suitable dams, the latter so designed as to make possible the handling of the enormous rises which semi-annually pour down the river.

James B. Girard, former territorial engineer of Arizona and a man known throughout the Southwest as a thorough engineer and master bridge builder, has solved both problems. The first by locating six dam sites immediately west of the end of the Grand Canyon of the Colorado and the second by his patented and well-tested "multi-cellular" dam which is so designed as to resemble a great honeycomb, the cells of which may be thrown wide open in times of flood permitting the comparatively free and unrestricted passage of the waters.

He has received permits from the Department of the Interior for the construction of his six dams and from the Patent Office he has received the necessary protection on his method of dam building.

The project is one that has engaged the engineer for almost a score of years. Beginning in 1898 he made a careful survey of the Grand Canyon itself, spending a little more than two and one-half years at the bottom

of the great crevasse which he and his companions mapped for a great part of its course, some of these surveys being the first that had ever been attempted.

OPPOSES DAM IN CANYON

The Government opposed any idea of granting power permits within the limits of the Canyon and, perforce, the engineer continued his search further to the west and here his long years of work were rewarded. He located six sites, each capable of developing 50,000 or more horsepower and for the use and development of these he has received the necessary permission from the Department.

A road-making party is now in the field building a road from Peach Springs on the Santa Fe Railroad to the dam site on the river distant only twenty-one miles. At this point the banks of the stream are so accessible that an automobile can be driven into the water.

Dam site No. 3 is just above this point and here the first unit of the project will be built. As soon as the road is completed supplies for the building of a camp will be sent in and the work commenced. It is intended that the first power plant shall be completed and in operation within eighteen months.

Within a radius of 300 miles of this dam lie nearly all the great mines of Arizona and southern California and it is expected that the initial installation of 50,000 horsepower will be largely used in supplying current to these plants. Contracts are in contemplation with both the Santa Fe and the Southern Pacific railroads for the electrification of their lines across the continental divide where both roads have to lift their trains a vertical height of more than a mile.

A contract also has been considered for the furnishing of electric power to the new plants at Ajo and Cornelia as well as to the mines in the northern part of Arizona.

TO RECOVER NITROGEN

While the furnishing of power to the mines is one of the prime objects of the installation, it is intended also to manufacture artificial fertilizers from the nitrogen of the air combined with the limestones which form gigantic cliffs all along the reaches of the river where the dams will be located.

The manufacture of nitrates from atmos-

phoric nitrogen has been begun in Europe and to a smaller extent, in America and has proven tremendously profitable as well as thoroughly practical. Its only requirements are vast supplies of cheap power and limestone and this combination seems realized along the Colorado as at no other point in the world.

As is well known to all familiar with the mineralogy of Arizona, there are great ore deposits in many places in the State which await only the advent of power to become profitable. These as well as the mines already in operation will be vastly benefited by the completion of even the first unit of the proposed plants.

EPSOMITE DEPOSITS ATTRACT ATTENTION—AVAILABLE REPORTS

An increasing interest in deposits of epsomite has been evidenced in recent months. Several new deposits have been reported and investigations are being made as to the possibility of working some of those which have been known for some time.

There is no single report published by the Survey on the subject of magnesium sulphate but there are several references to such deposits. Bulletin 364 contains a brief note concerning a deposit of epsomite in several small lake basins, 3 miles north of Wilcox Station on the Union Pacific R. R. in Wyoming. The largest of these, known as Brooklyn Lake, has an area of 90 acres and is covered with a deposit of nearly pure epsom salts.

Bulletin 5 of the Texas University Mineral Survey contains a similar note concerning a deposit of epsomite in Brown County, Texas, with an analysis showing it to contain 76 per cent magnesium sulphate, and also a statement that it occurs in large quantities.

Some time ago specimens of epsomite were sent to the United States Geological Survey from M. J. Anderson, of Manti, Utah, and Dr. G. B. Loring, of Richfield, Utah, in both cases said to represent deposits of considerable magnitude.

NEW YORK NEW MINING CAPITAL

War Tax Drives British Companies to Move Their Headquarters

The new British budget, which provides for a supertax of 50 per cent on the profits of all British companies already has caused the removal to the United States of the headquarters of several companies representing South and Central American gold mines. Mining men in London assert that unless the tax is reduced this movement will become so great that New York instead of London, will become the mining capital of the world.

The tendency to bring headquarters to the United States is becoming so pronounced that mining interests in England are bringing pressure to bear on the chancellor of the exchequer to have the supertax modified in favor of gold mines.

MARKED DEVELOPMENT TAKES PLACE AT MARYSVALE, UTAH

Alunite deposits near Marysville, Utah, have increased greatly in importance since the publication of the Geological Survey Bulletin No. 511 in 1911, the last publication referring to them.

Twice as much material has been exposed and the extent of the deposits has been proven to be very much greater than was thought to be the case previously.

In order to bring this development up to date, G. F. Loughlin is preparing a new report upon these deposits.

The use of alunite is still considered to be in an experimental stage. The Mineral Products Co., of Chicago, however, has erected a large plant at Marysville, and has started work. They probably are recovering potassium sulphate, without attempting to get any by-product of aluminum.

The report describes the deposits and discusses the possible utilization of the mineral, and reviews the geology of the region.

GALE GOES TO MARYSVALE TO REPORT ON ALUNITE

As a part of the examinations in connection with the search for potash, the U. S. Geological Survey for a number of years has examined nearly all important deposits of alunite in different regions of the United States.

The most important of these deposits have been discussed in the Survey reports. The alunite deposits near Marysville and Beaver, Utah, which were described several years ago by the Survey, are now undergoing re-examination by H. S. Gale for the Survey, in order that results of deeper exploration of the veins may be communicated to the public.

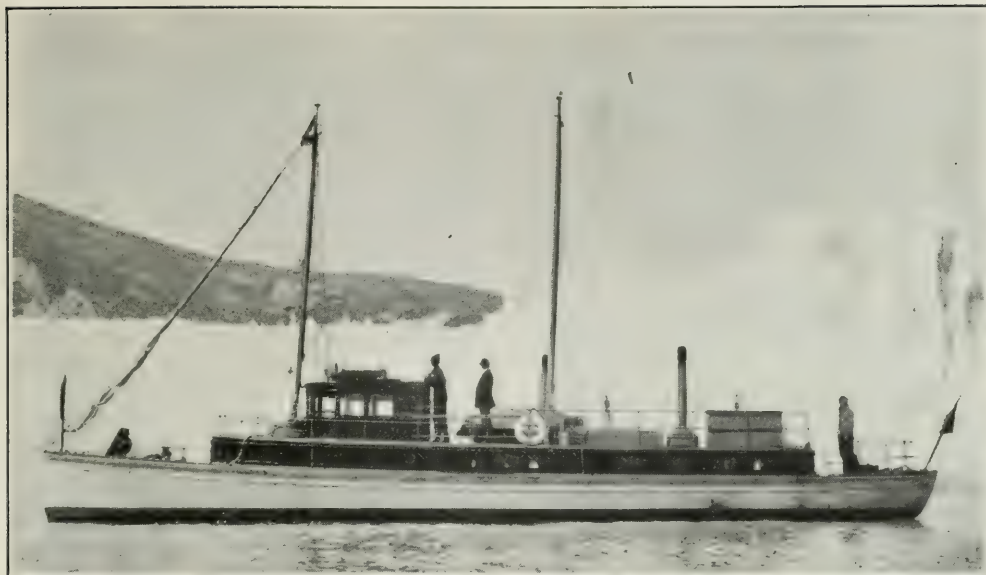
The work of the Survey aims, so far as is practicable, to inform the public as to the amounts of alunite available in the country, as well as to acquaint them with the geology of the deposits and to advise wherever processes are developed by which potash and other products can be extracted successfully on a commercial scale.

It is expected that a more comprehensive report upon the Utah alunite deposits will be published by the Survey at an early date.

GEOLOGISTS REPORT ON COTTON- WOOD AMERICAN FORK DISTRICT

B. S. Butler and G. F. Loughlin are co-authors of a report on the Cottonwood-American Fork mining region in the Wasatch Mountains of Utah.

This report describes the stratigraphy, structure and ore deposits of the region and makes a brief comparison between the ore bodies of this region with those of the adjoining Park City District.



LAUNCH TAHN

Owned by the government and used by the Geological Survey party which investigated Alaskan water resources this summer

TEST POWER POSSIBILITIES OF ALASKAN STREAMS

The United States Geological Survey, in cooperation with the United States Forest Service, is carrying on an investigation of the water resources of southeastern Alaska, in order to determine power possibilities for use in connection with the development of the mining and timber industry in this section.

Eight gauging stations, equipped with automatic gauges, have been installed, so that continuous records will be obtained. The low-water period in this section occurs during the winter months and special measurements will be made to determine the flow during the coming winter.

The gauging stations are located near the coast and are reached by boat, which is the principal means of transportation in southeastern Alaska, as but few roads and trails have been built.

The headquarters for the work are at Ketchikan. The Geological Survey is represented in the field by George H. Canfield, assistant engineer, and the Forest Service by W. G. Weigle, forest supervisor.

Compliments Platinum Report

In its issue of August 21, the *Mining Journal*, of London, comments complimentarily on J. M. Hill's platinum report made for the Geological Survey.

BARYTES INDUSTRY BOOMS IN U. S. WITH EUROPE CUT OFF

Due to the stopping of importation of crude barytes and all barytes chemicals from Germany, the barytes industry in this country is looking up decidedly. In addition there has been a great expansion in the barytes chemical industry of this country. Production is being stimulated in an unprecedented manner. This is especially true in Kentucky and Tennessee, where the deposits have not been actively worked during the last few years.

The most important use of barytes is in the manufacture of paints. All manufacturers on the eastern seaboard were using German and English barytes before the war.

The crude barytes were laid down at eastern ports for \$6 per ton. All use of American barytes was barred by the fact that the lowest freight rate from American deposits was \$4.40 per ton. From the Tennessee and Kentucky deposits the freight alone was \$6 per ton.

One of the peculiar features in regard to the use of American barytes in the East is the fact that the Missouri deposits enjoy a much lower rate than do the Kentucky and Tennessee deposits. The average haul from the Missouri mines is 1,200 miles, whereas the Tennessee average is 800 miles.

A large number of firms engaged in handling barytes have embarked in the business since the opening of eastern ports.

PROFESSORS AT COLUMBIA DISCUSS SCHOOL QUESTION

Improperly Equipped Mining Engineers Declared to be a Menace to Mining Industry

Following the line of discussion set forth in a communication from Prof. Robert Peele, published in the September issue of THE MINING CONGRESS JOURNAL, other members of the faculty of the School of Mines of Columbia University have expressed opinions on the same subject. Prof. Henry S. Munroe says:

"I think that there can be no question as to the idea that our mining engineers would be better trained and that the mining industry would be better served by a smaller number of mining schools well equipped for the work. A half-trained mining engineer is likely to do much mischief, and the completion of his training, at the expense of his clients, is likely to be very expensive!

"A mining school should cover a wide range of subjects, and in a small school the professors will have to cover too much ground, teach too many different things to do their work well. It is difficult, if not impossible, to get experts to accept a chair in such a school at any salary.

"A small school is apt to be greatly affected by its environment, and to lose breadth of teaching, especially if located in a mining region, and with its students familiar with the practice of that region and willing to listen to no other. Such a school quickly becomes narrow and provincial.

"A larger institution, especially if connected with a university, and with other professional schools, draws its students and faculty from many places, and the atmosphere is more favorable to breadth of teaching. Students from many different mining regions compare notes, and the whole body becomes receptive. The presence of professors with wide and varied experience in many lines of engineering is most stimulating. Such an institution attracts the best men in each profession as teachers, and the most ambitious students from all parts of the country.

"In a large institution, especially in a university, research work is always in progress and graduate students give a tone to the student body and research professors leaven the faculty with their spirit, so that both study and teaching are insensibly lifted to a higher plane."

CLASSED AS EDUCATIONAL EVIL

Prof. Edward F. Kern says:

"I am very glad that the question of the disadvantage of the large number of mining schools has finally received the attention of editors and other influential persons, who can help to right one of our educational evils. During the past ten years I have come in contact with a number of graduates of min-

ing schools of State universities, and in a majority of cases these men have expressed regret that they had selected the profession of mining; their comment was that this profession was suffering from an over supply, and that the graduates from the State universities and smaller mining schools were not given the preference that graduates from the School of Mines of Columbia University received. As the demand for mining engineers has not kept pace with the number of mining graduates which are turned out each year, and the relative demand is growing less each succeeding year, the chances of the graduates of the smaller universities grow less encouraging. The fact that the smaller universities are not sufficiently equipped to carry on the work of proper instruction in mining, and also that the instruction is given by only one or two instructors, is an argument strongly in favor of the mining school which is connected with a large university as compared with an independent mining school which is connected with a comparatively small State university. In mining, as in any other profession, it is the man who has received the best and most thorough instruction and training who is given preference and who is more sure of gaining success. A comparative study of the records of mining graduates shows that the majority of successful mining engineers are those who have been trained in the larger universities."

FILL CERTAIN DEMAND

Prof. William Campbell says:

"I take it that by mining schools is meant institutions teaching both mining and metallurgy. In regard to the latter subject there can be no doubt as to the great advantage of the larger schools, especially in respect to the teaching what may be called the new metallurgy based on physical chemistry and metallography in its broadest sense.

"It seems to me, however, that some consideration ought to be given to the smaller schools as filling a certain demand. Could you not lay stress on the two types of schools found in Germany, the Bergschule and the Bergakademie (and Royal Colleges of Technology) and their particular fields?"

SEEK BIG SCHOOLS' DEGREES

Prof. Arthur L. Walker says:

"I am firmly convinced that the large number of small mining schools attached to the various State universities is detrimental to the mining industry. It is impossible for these schools with limited facilities to give the students the advantages that the recognized mining schools offer. This is especially the case in regard to instruction in the fundamental engineering subjects.

"That these cannot compete with our leading mining schools is proven by the fact that so many students after graduating from the State universities come to the mining schools connected with large universities for

additional instruction. Students also recognize the great advantage in having a degree from the larger institution."

FIRST-AID WORKERS AN ASSET WHICH NATION HAS OVERLOOKED

Bureau of Mines Work Has New Value in Light of General Trend Toward Preparedness

An asset of the Bureau of Mines and of the United States as a nation has been overlooked.

The training of thousands of miners in first-aid service makes possible a reserve for hospital service in time of war which is certain to be most efficient.

No less than 50,000 trained men are available at this time for such a reserve. Large numbers of these men can do as efficient work as a surgeon, so far as concerns first aid to the wounded.

This number is increasing rapidly under the instruction of the men of the Bureau of Mines who are going continually from one mine to another engaged in this work. Many of the mining companies also are carrying on systematic training of their men for first-aid service.

The experts of the Bureau of Mines present splendid material for officers of such a corps if the United States should need their services.

Formerly when an accident occurred in a mine, the injured were hurried to the surface as quickly as possible with little attention to the injury under ground. This resulted in needless deaths. There are cases on record where a fractured limb resulted in death due to loss of blood caused by unnecessary moving of the victim in an effort to get him to the surface, which resulted in the severing of an artery by the broken bone.

All of this is changed in present practice. An injured man is given first-aid treatment on the spot. Some one, or perhaps several, of his fellow workmen, have been given special instruction as to just how to act. Broken bones are carefully arranged so as to cause a minimum amount of suffering, and then are strapped in plints. The victim is made as comfortable as possible, and then is taken out of the mine in a careful manner, after all possible aid has been given him that is available within the mine.

Literally thousands of lives are being saved in this way every year.

The effectiveness of the service is becoming so apparent that it is growing with leaps and bounds, and within the next few years there will be hundreds of thousands of miners in the United States who will have a good practical knowledge of rendering first aid. They will be skilled to a certain degree in the reduction of fractures, the curtailment of serious loss of blood and the treatment of internal injury.

To be able to throw such an effective corps of men into the field in case of a sudden outbreak of hostilities in which the United States is engaged, is an asset whose value cannot be calculated.

If the use of asphyxiating gas becomes a fixture in warfare, the Bureau of Mines will be able to furnish a well-equipped helmet corps. The helmet men they have trained throughout the country would be able to give very effective service in case exposure to gas becomes necessary.

COMPLETE SETS OF PUBLICATIONS OF U. S. GEOLOGICAL SURVEY RARE

It requires twenty-seven regular sectional bookcases to hold the matter which has been published by the Geological Survey since its foundation thirty-six years ago.

In addition, one large map case is required to hold the folios which have been issued. Over 2,200 topographic maps have been issued, which fill two sections of a standard map case.

To date the Survey has published 622 bulletins, 375 water supply papers, 54 monographs, 96 professional papers, 200 folios, 5 special publications, annual volumes covering mineral resources investigations, annual reports by the director, instructions to topographers, field methods for survey geologists, and various other publications for circulation within the bureau.

The special publications mentioned are all on Alaska. The monographs are highly technical papers and have a limited circulation. The mineral resources have been published annually since 1882. A portion of the time these have been printed in two volumes. These reports were published annually with the exception of the years 1883-84 and 1889-90, which were combined.

While a large number of complete sets of the publications of the Geological Survey are in existence, none is for sale so far as is known. Offers as high as \$1,400 have been made for the entire set, including a complete set of the topographic maps.

RADIUM BULLETINS SOON WILL BE READY FOR DISTRIBUTION

The Bureau of Mines' radium bulletin describing the new process for extracting radium and telling of the operations of the plant is in the hands of the printer. It will be ready for distribution within the next few days.

The mining, concentration and milling of carnotite ore is the subject of a Bureau of Mines bulletin which will appear within the next two months. This bulletin has been delayed in order to incorporate concentration costs which could not be arrived at accurately until after the installation of the mechanical appliances now being put in place.

AN ADVERTISER IN TRADE PAPERS RELATES EXPERIENCES

Warren Aikens, writing in the *Mining World* of October 16, has the following to say in regard to advertising in trade papers:

As a manager scans the list of expense items which make up his burden, woefully few of them can be touched at all. But, ah! There is the trade journal advertising! That can be dispensed with for a time, or at least greatly lessened. Economy urges that something be done. The harassed judgment is persuaded to "try for a while" what eliminating this expense will do. So the blue pencil goes through that item. Consequences follow like a swarm of locusts.

"What," writes the western sales manager, "has become of our ad. in the . . . ? You know my men are pushing that line now, and we need to keep it before the superintendents and owners of plants in this part of the country. I know we have to economize just at present; but, for heaven's sake, don't let a few dollars' worth of advertising stand in the way of our campaign here."

Another mail brings the weekly report from MacDonald, manager of the southern office, with an enclosure on which he has written, "Note." It says: "I am sorry, old man, that your company was overlooked in sending out the specifications; but the fact is, I instructed my secretary to write to all of the concerns listed in the . . . , supposing, of course, that your name was there with the rest, as usual, and when no reply was received from you I thought it was because you didn't care to bid. Aren't you advertising now?"

"What's your idea," explodes Collins, head of the construction department, as he bounces into the manager's presence, "in stopping our ad. in the . . . ? They got a wire in Thursday saying that the Ridgeland plant had burned, and turned it over to Snavelly, of the Robely Company. I only just learned of the fire by reading this week's issue of the paper, and, when I called up the editor to ask why he didn't put us next, as ordinarily, when he got the news, he said they naturally had to give preference to their advertisers. There's a \$300,000 contract gone, to a certainty, and I know we could have got it if we had been on the ground as soon as the Robely people. As it is, they've undoubtedly got the plans in for a new mill, and the specifications so drawn that we can't bid at a profit."

From Collins the manager turns again to his mail. "Enclosed find sketch and preliminary estimates on a plant which the Cia. de Rio Estrella is going to put up at Entresna," begins a letter from Blackford, agent of the company at a South American capital. "Please cable lowest figure at which we can take the job. I'm afraid it's too late, but with a favorable price we may be able to get in. The director of the Cia., Jose Silvera, received a copy of the *World's Export Number*, and on looking through it he saw an advertisement of Farmer & Son, with the

address of their agent at Para, so he wrote there, not thinking of us in this connection until yesterday, when I happened to meet him at the club. Roddies went up the river from Para on a specially chartered launch when he got Silvera's letter, and has practically acted as their engineer in designing the new works at Entresna; therefore, our only show is in a low price. You know Entresna is way back near the mountains and Silvera seldom comes here, so I had no opportunity to know what was going on. I thought you carried an ad. in the *World*. Why don't you?"

So the reproaches from salesmen multiply. While most of these bear prima facie evidence of being justifiable subjects for complaint, the manager begins to feel that some of the men are putting them forward as excuses to cover actual neglect of duty. Yet the uncertainty prevents reprimand, and the result is more or less demoralizing.

Blanchard, when rebuked for losing the Mayville contract, comes back with the statement that the superintendent saw a new attachment for these machines advertised by the Weber Company and had "overlooked our previous announcement on the same subject," not having been interested in it at the time. Consequently, the Weber people had the first chance and made the most of it.

Moreover, the retrenchments recently entered upon have caused considerable talk, and competitors are pointing to the withdrawal of the company's advertising as an indication of financial embarrassment, warning customers against placing contracts for any time ahead with a concern liable to become insolvent and leave them in the lurch, with machinery urgently needed to complete projected improvements or additions still unbuilt. The manager knows of one very large order lost through that report before the company learned of the circumstances and could reassure the purchaser's mind.

Such, in brief, is the history of many an attempt to "cut out" advertising. The details will vary according to circumstances, but the facts in such cases are essentially the same. That the trade and technical journal has become an important—yes, an essential—factor in our modern industrial world is incontrovertible. The author is not, and never has been, connected with a trade journal, but writes from the standpoint of the advertiser.

BRASS USED EXTENSIVELY IN SHELLS AND CARTRIDGES

One and one-fourth pounds of brass is used in the time fuse mechanism of a 3-inch shrapnel shell. The cartridge case contains 2¼ pounds of brass. Shells for rifles, which also are used in machine guns, contain 200 grains of brass. Other shells and cartridges contain similar amounts of brass in proportion to their size.

This information was obtained recently at the War Department.

PERMISSIBLE EXPLOSIVES REDUCE FATALITY RATE FROM 3.39 TO 0.96

This Decided Betterment, Figured on a Basis of Each 10,000 Men Employed in Bituminous Mines, Has Been Made Since 1903 and Is Due Largely to New Quick-Flame Powders

How the use of low temperature, quick flame explosives has been largely instrumental in decidedly reducing the fatality rate in bituminous coal mines was explained by Van H. Manning to the mining section of the National Council for Industrial Safety, which met at Philadelphia, October 20. In his address Mr. Manning said:

The principal result of the work of the Bureau of Mines since its organization has been in the development of the movement for greater safety and better health conditions in the mining, metallurgical, and allied industries of the United States. It has been able to work out cooperative agreements with many of the State agencies having to do with the reduction of accidents, and has received the hearty support of the mining companies throughout the United States in all of its efforts to reduce the hazards of this great industry. In conducting its campaign for the increase of safety in the mining industries, the following general plan of cooperation between the national government and other large agencies has been adopted: (1) That the national government conduct the necessary general inquiries and investigations in relation to mine safety, and disseminate, in such a manner as may prove most effective, the information thus obtained and the conclusions reached; (2) that each State enact needed legislation and make ample provision for the proper inspection of mining operations within its borders; (3) that the mine owners introduce improvements with a view to increasing safety as rapidly as the practicability of such improvements is demonstrated; and (4) that the miners and mine managers cooperate in drafting and enforcing safety rules, regulations and laws. The States, miners, mine owners and other agencies, such as mining and engineering societies, are now showing a commendable willingness to cooperate with the national government in this safety work.

COOPERATION NECESSARY

The Bureau of Mines is only one of several agencies working to accomplish a great end, and its activities can be most beneficial only in those cases wherein it is cooperating with individuals and organizations who have an interest in the matter of safety.

Among the principal investigations conducted by the Bureau tending toward the reduction of coal mine accidents are those

relating to gas and dust explosions, the use of explosives and electricity and a study of safety lamps. It has also done much work in the development of mine-rescue and first aid apparatus, and has conducted a campaign of education whereby these appliances may be used most effectively. Thousands of miners are now able to administer first aid to their injured fellow workmen. Suffering is reduced and many lives saved.

When Congress first authorized the investigation of the causes of mine explosions, it was not generally believed that coal dust alone could spread an explosion throughout a mine. Now that the explosibility of coal dust has been demonstrated by the Bureau through work in the laboratory, in the field, and in its experimental mine, the Bureau's efforts are being directed toward the devising of effective and practical methods of preventing or arresting explosions. Through the development and use of rock-dust barriers and other devices, the intensity of future coal mine explosions most certainly will be decreased.

PERMISSIBLE EXPLOSIONS

A systematic investigation has been made of the possibility of coal mine explosions starting from improper use of explosives or using improper explosives, or from electric sparks, miners' lamps, mine fires or other agencies. Various tentative conclusions and proposed recommendations regarding proper precautions are now being tested on a practical scale in the experimental mine near Pittsburgh.

The Bureau has carried on a number of investigations as to the nature of explosives used in mining operations, with a view to changing the character of explosives so as to meet the needs of the various branches of mining, and especially to increasing safety in coal mines. Both the wrong use of explosives and the use of an explosive not suitable for certain classes of work have resulted in coal mine disasters. The Bureau has brought about what is little short of a revolution through the introduction of new types of low temperature, quick-flame powders, designated as "permissible explosives," in the more dangerous coal mines of the country.

FATALITIES FALL OFF

In the bituminous coal mines of the United States, the fatality rate from explosives, per

10,000 men employed, has been reduced from 3.39 in 1903, to 0.96 in 1914, largely as a result of the use of permissible explosives.

The investigation of explosives is also important to metal miners, whose health and efficiency are affected seriously by the use of explosives.

Through the activity of the Bureau in calling attention to dangers in the use of electrical machinery in mines, manufacturers have devised safer types of apparatus, and States have enacted stricter laws governing electric installations. An investigation of electric lamps for miners has resulted in greatly improving the types now offered for sale.

OTHER SAFETY LAMPS

In regard to safety lamps other than electric, tests have been made to ascertain the comparative merits of different types of safety lamps, including their usefulness in furnishing light to miners, their relative safety, and their value in indicating the presence of explosive gas.

In considering the Bureau of Mines as a factor in mine safety, it must be remembered that the greatest good can only be accomplished where there exists a spirit of cooperation, and a willingness on the part of all agencies, State, Federal and individual, to assist each other.

MCCASKEY EXPLAINS GROUPING OF RELATED METALS IN REPORTS

In his introduction to the general reports on gold, silver, copper, lead and zinc, H. D. McCaskey, head of the mineral resources division of the Geological Survey, says in part:

In the mining industry five metals are closely related in both the genesis and the geologic occurrence of their ores; they also hold together in mining and in metallurgical treatment. They are gold, silver, copper, lead and zinc. Of their ores, some contain all five metals, many contain three or four, and few contain only one. Gold and silver, for instance, on the one hand, and lead and zinc, on the other, almost always stand in close genetic relations, and the ores of each two are usually mined together. Copper ores almost invariably produce some silver and gold as well as copper, and lead ores, with certain exceptions, produce notable supplies of silver. Zinc ores in the western States contribute also to the silver production. In the same mine sometimes, and in the same mining district frequently, all five metals occur in commercial quantity.

This situation is recognized by the United States Geological Survey in its publication of the annual reports on the mineral resources of the country; hence the general treatment of each of the five metals in the general reports and the grouping together of the related metals in the various mines reports descriptive of individual or geographically grouped States.

To facilitate advance publication the complete report upon these five metals is therefore divided into sixteen sections, each of which is published separately. The first four sections give figures of output for the calendar year in marketable form for the metals named as obtained from the smelters, refineries and mints, and general reviews of the respective industries for the entire country; the last twelve sections give the production as obtained from the mines so far as possible in terms of recoverable metal in ores and other material sold or treated during the calendar year, and supply information in detail relative to the mining industry in the respective States, counties and mining districts. The figures given in the general reports are the final official statistics of production for the country and of the States. The general report on gold and silver includes the statistics of recovered precious metals as determined jointly by the Bureau of the Mint and the United States Geological Survey.

In measurement of ores, concentrates and similar material the short ton of 2,000 pounds is used throughout. The ore classification is necessarily arbitrary in part. An ore is generally understood to be worked at a profit for one or more metals. The complex nature of western ores, especially, and the gradations from one well-recognized class to another render essential some fixed measures for the terminology used. The dry or siliceous ores comprise gold and silver ores proper, as well as fluxing ores carrying considerable quantities of iron and manganese oxides and very small quantities of gold and silver, and also precious metal bearing ores carrying copper, lead or zinc in quantities too low to classify them as copper, lead, zinc or mixed ores. The copper ores include those carrying over 2½ per cent of copper, or even less in the cases of the great disseminated copper deposits of the West and of the copper ores of the Lake Superior region. In general, the lead ores are those containing over 4½ per cent of lead, and the zinc ores are those containing 25 per cent or more of zinc, both irrespective of their precious metal content; but some ores of lower grade in lead and especially in zinc, are treated profitably for these metals, and of course they are then classified as lead or zinc ores, as the case may be. The mixed ores are combinations of the ones enumerated.

The price per unit of metal production (gold excepted, which is fixed by law at \$20.67+ per fine ounce) is based upon averages of daily market prices current at New York for silver, copper and lead, and at St. Louis for metallic zinc or spelter.

Molybdenum Bulletin Nearly Ready.

A Bureau of Mines bulletin on molybdenum has been completed and is in the hands of the printer.

Mineral Land Decisions

Further consideration has been denied in the case of the Northern Improvement Co., which filed a motion for rehearing of the departmental decision holding for cancellation the group of coal claims known as the Chezum Coal Claims, near Juneau, Alaska.

In the decision complained of the finding in part was:

"The record discloses that between fifty and sixty excavations have been made on the group, most of them showing coal, but this work appears to consist of merely surface openings generally of small dimensions and to have been performed for proofing purposes, with a view to ascertaining the number and continuity of coal seams and the nature of the coal exposed.

"It does not appear that the original claimants made any attempt or intended to use these excavations for the commercial production of coal.

"It appears in the case here under consideration that none of the excavations shown to have been made upon this group, can be called with propriety, a mine of coal. This being true, none of the claims is entitled to entry or patent."

No legislation has been enacted which changes the requirement that persons should have "opened or improved a coal mine or coal mines."

The Department holds that it cannot vary the law to meet the necessity or convenience of persons. Congress has required the opening and improvement of a mine.

A mine, according to competent authority, is "an excavation in the earth made for the purpose of getting metals, ores or coal." No occurrence of ore is designated as a mine unless something has been done to develop it by actual mining operations.

The department holds that its decisions have been harmonious with this definition.

In addition, the regulations of April 12, 1907, providing that "a perfunctory compliance with the law in this respect will not suffice, but a mine or mines of coal must be opened and improved in fact upon the land claimed."

In this case there was no mine equipment or facilities to extract and bring to the surface commercial quantities of coal for disposal to the public. Until that is done it cannot be said that a coal prospect is a coal mine.

For these reasons the Secretary of the Interior denies the motion for a rehearing.

Mining Company Loses

An appeal from the judgment of the Commissioner of the General Land Office by the Chignik Coal Mining Co., has resulted in an adverse decision by the Secretary of the Interior for the mining company.

The Commissioner ruled adversely on an application by the mining company to purchase a group of four claims, each embracing 160 acres, situated in the Juneau Land District of Alaska. The properties are known as the North Pole, Equator, Baby Ruth and Volunteer.

These claims are said to have been located in July, 1915, by John Monson, Charles Sivertsen, Frank Murphy and S. F. Strand. The notice of location of each of the claims contains the following recital:

"It is the intention of the undersigned to improve, mine, work and develop the said coal lands hereby claimed, and to enter them in the U. S. Land Office for Alaska, according to the Act of Congress, where all coal lands in Alaska can be entered."

On August 11, 1907, an attorney for the locaters executed a quit claim deed purporting to convey the claims to Henry S. Tibbey, who by quit claim deed, dated December 11, 1908, purported to convey the ground to the applicant company.

The application to purchase was filed April 8, 1909, and told of an expenditure of \$2,500 in the opening and improving of a mine of coal on the land, together with other expenditures in connection therewith which totalled \$6,800. The mine is described as having two tunnels aggregating 160 feet in length.

The application was rejected by the Commissioner primarily on the ground that the notices of location were not filed in the local office within a year from the date of the locations as required by law.

A modification of the President's withdrawal of Alaskan coal lands says: "Nothing in any withdrawal of lands from coal entry heretofore made, shall impair any right acquired in good faith under the coal land laws and existent at the time of such withdrawal."

The order of withdrawal thus modified saved and excepted from its operations all Alaskan coal claims that were valid and subsisting at the time of the order, and left it in full force and effect as to all coal lands not then included within perfected locations.

The notices of location of the four claims involved in this case do not conform even in substance to the requirements of various instructions in the matter of disclosing what,

it any, work constituting the opening or improving of a mine, had been performed on the claim at the date of the purported locations.

The application to purchase, while reciting the opening or improving of a mine on the land covered thereby, contains nothing upon which the date of the initiation of such work can be determined or which tends in any degree to establish the evidence of a valid location or claim to any portion of the area at the time of the withdrawal of 1906.

On account of the failure of the company to show that at the time of the withdrawal of 1906 a valid claim or claims existed as to any portion of the land, and aside from any other objection raised by the Commissioner, the application to purchase must be rejected, the Secretary of the Interior rules.

Coal Decision Modified

A modification of the decision of the Commissioner of the General Land Office, with regard to certain lands in New Mexico containing coal deposits, has been announced by the Secretary of the Interior.

George A. Keppers, Jr., on May 12, 1911, filed a coal declaratory statement for certain land in the Santa Fe district of New Mexico. He presented therefor an application to purchase.

Later others filed in the local land office a protest against the application, asserting generally that the land was non-coal in character and that they had established residences thereon.

On the same date the State of New Mexico filed a protest against the applications, asserting the claim of the State under the Act granting to New Mexico certain sections of land for the support of common schools.

Still later a protest was filed against the application by the field service of the General Land Office.

A hearing was had on these several protests and from the testimony adduced the local office ruled that the land contained workable deposits of coal and was known to be coal in character prior to June 21, 1898, at the time of the granting act.

The particular lands in question are held to have passed to the Territory of New Mexico at the date of the grant and this presumption can be overcome only by the submission of certain proof that the land was known to be coal in character at that time.

A variety of testimony taken in this case goes into detail as to the amount of coal existing in this part of New Mexico and as to whether it is workable.

Some exploration with a drill was made and while conclusions therefrom were somewhat indefinite, they strengthen the belief that the coal was not workable and that on June 21, 1908, the land did not possess any value on account of its coal content.

It is true that coal miners and coal oper-

ators living in the vicinity of the land prior to the time of the grant, gave it as their opinion that the land was known to be coal in character. But aside from the openings and exposures, which are of little importance, they based their opinion on the fact that the country was underlain by red sandstone and inferred it to be in the horizon of the lower coal group of the Mesa Verde formation and therefore should be underlain by the Otero and Talbot beds. They admit, however, that further exploration would be necessary to demonstrate the presence of these beds on the lands.

The general practice of the U. S. Geological Survey in classifying coal lands has been to give a split bed the value of an unbroken bed with which it can be compared favorably.

It is evident that a solid, 3-foot bed is worth more than two 18-inch benches separated by 6 inches of clay or shale.

After careful study the Survey adopted the simple expedient of prescribing that any parting or bench of bone or impure coal included in a bed injures the value of the coal of the bed in amount equal to the thickness of the parting.

Thus the split bed, which exists on the property under consideration, with its 6-inch parting, is regarded as equal to a solid bed 30 inches thick. (Thirty-six inches of coal minus 6 inches of parting, equals 30 inches.) If the benches on either side of the parting are not of the general thickness, the thickness of the parting is deducted from the thickness of the thinner bench. It is not necessary to consider the whole thickness of a coal bed.

It is the practice of the Survey to start with the base bench, if not itself a workable thickness, and to add the thickness of the next bench above or below, after deducting the thickness of the intermediate parting. If the whole bed thus included is still not of workable thickness, and more benches exist above or below, the thickness of these benches is added, after subtracting the thickness of the parting between them and the principal bench. If the parting is thicker than the then adjoining coal bench, that bench is considered as having no value.

By applying this rule it is evident that there is no longer question as to the value of the coal on one of the properties involved in this case.

As a consequence the decision of the Commissioner is upheld on the one property and reversed as to the other property in question.

Consider Holmes Memorial

A committee has been named by the Director of the Bureau of Mines to cooperate with the other offices of the Bureau in the matter of providing a suitable memorial to the late Dr. J. A. Holmes. The committee consists of Dr. C. L. Parsons, George L. Pope, Judge J. W. Thompson, C. A. Davis and F. J. Bailey.

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EDITORIALS

MINE MANUFACTURING AS AN INVESTMENT

The American Mining Congress seeks to serve all who are interested in mining. It is peculiarly interested in those who have invested in unfortunate enterprises, as well as in those who have invested unfortunately in alleged mining enterprises, designed to mine dollars from pockets instead of mineral values from the ground. Its interest in these is partly because of the injustice which has been done them and partly because the injustice thus practiced has given the mining business a bad name and has closed the door through which other funds might have come for the development of legitimate enterprises.

RECOMMENDED LEGISLATION

Many years ago an American Mining Congress committee on mining frauds under the chairmanship of George C. Pardee, then Governor of California, recommended for enactment by the several States a law making misrepresentation of any facts concerning any mining property which was the subject of nego-

tiation, a misdemeanor. This law, with modifications, was enacted by some fourteen States, but no systematic effort has been made to enforce it. This work was under way when the first Washington campaign for the creation of a bureau of mines was undertaken. This later campaign so engrossed the possible activities of the Congress that the work of providing protection to mining investors practically was abandoned. It is true that committees were appointed thereafter, but without any practical results. There may be less need now than in former days to seek protection for the mining investor because so few investments of this kind are being made, but this fact emphasizes the need of the counterpart of this work; *i.e.*, the stimulation of investment in prospective metal mining enterprises.

The official call for the Philadelphia Convention of the American Mining Congress made special reference to the need of developing more prospects into mines in order that, when the present profitable mining areas are exhausted, other ore bodies might be ready to utilize the capital, professional skill and labor now so employed. Attention was called to the fact that plenty of capital is available to take over well-developed mines but practically none is to be had for the development of new mines.

THE LAW OF AVERAGES

The manufacture of a measured and tested ore body into metal is an absolutely safe occupation, while the development of any one prospect is a very hazardous undertaking. The insurance of one life is even more hazardous and yet life insurance by the law of averages is made perhaps more safe than any other business. All men eventually die and become a loss to the insurer, but all prospects are not failures and some of them develop into undertakings yielding enormous profits. The very few companies in the United States engaged in the business of developing prospects are finding the business exceedingly profitable. With these companies what might be termed the "promotion hazards" are entirely eliminated. Pools are formed, a skilled "mine hunter" is employed, op-

tions are taken upon a considerable number of promising prospects and development work is carried on. If in the judgment of the mine hunter, a prospect is not sufficiently promising to warrant further work, the option is surrendered and the property is turned back to the original holder.

QUESTION OF VALUES

The surrender of the option does not mean that the prospect may not make a mine, but only that the judgment of the "mine hunter" does not approve further work, under all the conditions, the option price possibly being the determining factor. The condition shown by development might indicate a value of \$50,000 instead of the \$100,000 called for by the option contract. Neither does it prove conclusively that further development work may not prove the higher valuation. However, the opinion of the party in charge does not approve further expenditures and the property is abandoned. Upon some other of the properties upon which options are taken, work is continued, ore bodies are developed sufficient to justify the taking up of the option, the property is purchased and equipped and production is commenced. Upon this going property a company is organized; a little less than control of the stock is offered for sale at a price justified by the ore bodies in sight, but sufficient to more than cover the cost of developing this successful venture, and the unsuccessful ventures which have been undertaken and abandoned. The syndicate having reimbursed its members for all expenditures, still retains a controlling interest in a valuable mine.

SAFE AS LIFE INSURANCE

The few companies which have pursued this general plan have made handsome profits. Cooperation and sufficiently wide operation to reach the average of hazard has made of mine development a business as safe as life insurance. It has demonstrated that the business of mine manufacturing can be pursued successfully by carrying on the work of development upon a sufficient number of well-chosen prospects to

reach the average. No field of operation offers more certain results and greater profits to the investor.

WHY THE SURVEY PUBLISHES GUIDE BOOKS

In connection with the publication of the guide books of the West by the Geological Survey the question often is asked, "Why was this work not done by private publishers?" The answer is easy. The Survey for thirty years has gone to the limit of its authority in trying to get private publishers to make use of the immense stores of valuable data that are in its files. Publishers generally have taken the ground that the chances for loss in such an undertaking greatly exceed the probabilities of profit and as a result could not be interested.

Director Smith, of the Geological Survey, has been very emphatic in his stand that the best of information does no good if confined to a filing case. He has devised every possible means of getting this valuable data to the public. He is known to the scientific world as one of the most ardent advocates of reducing scientific information to a state where it may be digested easily by the public in general. Much of the guide book work was conducted under his personal direction. When he was convinced that the publishers could not be interested in such a project he decided the good to be gained justified the publication of the books by the Government. He was loath to use any of the meager fund allowed his bureau for printing purposes but it was the only chance that he saw of giving the nation the advantage of a great deal of material that it had paid to collect. Consequently he books were ordered.

The demand for the guide books, despite the fact that they are sale publications, has surprised even those most hopeful for their success. Some of the editions already have been exhausted and rush orders had to be placed for more copies.

The resources of the West are laid before the traveler in such an attractive form that the books are welcomed as an

interesting diversion to break the monotony of the transcontinental trip. Instead of an uninformed survey of the passing country the passenger now sees a meaning in the view that passes before his eyes.

It will be noted that many of the best photographs that are used in the guide books have been furnished through the courtesy of publishers. No further proof is needed that the interests most affected have no thought that the Government is infringing on work that should be conducted by them.

The guide books are works of great merit. They will stand, doubtless, as well as the policy of plain writing that they represent, as a lasting memorial to the genius and discernment of the Director of the Geological Survey and his associates.

HOSTILE TO MINING FOR POLITICAL REASONS

When Senator Dickerson, of New Jersey, in 1825 ridiculed the idea of attempting to develop the West, he did not realize that his remarks would be held up, ninety years later to illustrate the lack of foresight on the part of a certain portion of Americans who lived in his generation.

Senator Dickerson's speech, which was the subject of a news item in the October issue of THE MINING CONGRESS JOURNAL, should be read by every member of the present Congress. It would be very likely to militate against cock-sureness.

Some members of Congress are constitutionally opposed to anything that is in the interest of the mining industry. They vote against any aid that is proposed for it. Some of them speak against well-thought-out measures providing for more adequate federal aid in the interest of one of the nation's greatest industries. That their remarks will rise to plague them or their memory in much shorter time than did those of Senator Dickerson is probable.

Much of the opposition to mining springs from an ulterior motive. In certain parts of the country all mining is regarded as reeking with swindle because some members of the community were gullible enough to buy mining stock from

some smooth talker who told them it represented the means of attaining sudden wealth. They fail to notice that the lightning rod agent and the vendor of gold bricks also fattened in the same territory.

Nevertheless it is popular with some persons to denounce mining. Any man possessed of sufficient intelligence to be selected as a member of Congress is certain to know that mining is just as honest and important a business to the country as is farming. As a matter of fact there are three swindles in farming land for every one based on mining land. Instead of trying to make political capital of a wrongly held belief a Congressman should rather use his position and influence to rid his constituents of erroneous ideas.

Representatives of the American Mining Congress in Washington never lose an opportunity to attempt to convince such Congressmen of the unfairness of their attitude.

BUREAU OF MINES' MOTION PICTURES DOING GOOD

Motion pictures are being made to serve many purposes. They are being employed in almost all lines of industry to carry out their objects.

The Bureau of Mines has been surprised agreeably by the immense popularity of the Bureau's films which are being circulated in coal mining districts. It is the intention to stimulate the desire on the part of the miners to better their living conditions, to improve their health and to impress them with first-aid doctrines.

The instructive value of these films has exceeded all estimates. There is a demand for films entirely out of proportion to the Bureau's ability to supply. We are convinced that great good is being done by the display of these films in mining communities.

GEOLOGISTS REPORT ON UTAH MINING DISTRICT

In view of the recent stock booming based on the Cottonwood-American Fork mining region, in the Wasatch

Mountains of Utah, a report is being prepared by the Geological Survey, which will be of particular interest.

Many claims are being made for this district by persons with stock market connections, and it is possible that operators and investors, who are contemplating becoming interested in this district will want to know what the government geologists have to say of the Cottonwood-American Fork area.

STRUCTURES RISE HERE AS EUROPE TEARS DOWN

In contrast with the unparalleled destruction taking place in Europe two notable engineering projects just have been completed in the United States. One is the world's highest dam, the Arrowrock structure at Boise, Idaho. It is 351 feet high. It will permit the reclamation of a vast area.

The other project is that of the long arch over Hell Gate, near New York City. This arch is 977½ feet long and furnishes direct railroad connection with the city from the North.

EXPECTS TO SEE MORE COPPER TREATED BY FLOTATION

The most important metallurgical change introduced during the year was the installation of flotation plants in copper concentrating mills, in the opinion of B. S. Butler, of the U. S. Geological Survey. These have been most successfully employed, both in the cleaning of concentrates produced by the usual wet methods, and also in the treatment of certain of the mill products, in which the losses by the methods previously in use were heavy. The use of the flotation process in the treatment of copper ores will probably be largely increased in the next few years. The development of leaching processes, which has received much attention for some time, was actively carried on during the year by several companies and plants are now in process of construction that will employ this method both for the treatment of low-grade oxidized ores hitherto unavailable, and for the recovery of an additional amount of copper from the material treated by other processes and that has hitherto been discarded as tailings. For both these types of material the method seems destined to be of prime importance.

SECOND REQUEST GOES TO PLACER MINERS

A second request for information from the operators of placer mines in the United States just has been sent out by the Geological Survey.

Responses were had from 30 per cent of those to whom the first request was sent. Twenty per cent of the first requests were returned unclaimed. This leaves 50 per cent of the placer operators to be heard from.

J. M. Hill, who is in charge of this work for the Geological Survey, calls attention to the necessity of securing more heed to this request for information, as it is absolutely necessary to have it before the work in progress in the interest of the placer miners can go forward rapidly.

The large number of requests which were returned unclaimed is due to the fact that a considerable percentage of placer miners do not stay long in one place. This is particularly true in California and Arizona. There seems to be a general tendency for them to leave no forwarding address. Attention is called to the fact that it would be of considerable service to the Geological Survey if miners will file with postoffices their changes of address.

INTERESTING TECHNICAL PAPERS TO BE PUBLISHED SOON

Some of the papers in preparation at the Chemical Research laboratory of the Bureau of Mines are:

"The Use of Copper Oxide in Gas Analysis," by G. B. Oberfell and G. A. Burrell; "An Approved Apparatus for Fractioning Gas Mixtures," by G. A. Burrell; "Development of a Methane Indicator," by G. A. Burrell; "Fusibility of Coal Ash," by A. C. Fieldner, A. E. Hall and A. L. Field; "Coal Analyses for the Fiscal Year 1913-14," by A. C. Fieldner; "Momentary Heating of Inflammable Dusts," by H. C. Porter and G. B. Taylor; "Diffusion of Oxygen through Coal," by S. H. Katz; "Structure in Paleozoic and Bituminous Coals," by R. Thiessen.

These reports are in various stages of preparation. Many of them will not be ready for distribution for several months.

BUREAU OF MINES EMPLOYS TOTAL OF 447 PERSONS

A total of 447 persons is employed by the Bureau of Mines. They are divided as follows: In the Washington office, 105; in Pittsburgh, 175; in the field, 135. In addition there are by special agreement five persons on duty in Pittsburgh and twenty-seven in the field.

HEAD GEOGRAPHERS MAKE WESTERN INSPECTION TRIP

R. B. Marshall, chief geographer of the United States Geological Survey, accompanied by Frank Sutton, geographer of the Atlantic Division; W. H. Herron, geographer of the Central Division; Sledge Tatum, geographer of the Rocky Mountain Division; T. G. Gerdine, geographer of the Northwestern Division, and G. R. Davis, geographer of the Pacific Division, has been making a tour of inspection to Survey field parties in the West.

The first visit was made by Mr. Sutton and Mr. Herron to parties in the Cuyuna Iron range in Minnesota and on the White Rock quadrangle in North and South Dakota and Minnesota. They later joined Mr. Tatum at Denver for a visit to some of the field parties in the Rocky Mountain States. They then proceeded to Portland, Ore., where Mr. Gerdine joined them, and they inspected the detailed topographic surveys in progress in the Willamette Valley. From there they went to Sacramento, Cal., the headquarters of the Pacific Division, and were met by Mr. Marshall and Dr. Davis.

The party attended the American Mining Congress Convention and the Congress of the American Society of Engineers in San Francisco and visited field parties at work in the San Joaquin Valley, of California, and in the Yosemite National Park.

Messrs. Marshall and Gerdine later went to Idaho to inspect topographic mapping in that State, and Messrs. Davis, Sutton, Herron, and Tatum went to Pioche mining district, Nevada, where another field party is at work. The last visit to be made will be at Houston, Tex., where five large parties are engaged in making a detailed topographic map of Harris County.

OPPORTUNITY OFFERED FOR PROFIT IN TALC DEPOSITS

Talc, if white, abundant and convenient to mine and market, offers an opportunity for profit at this time.

It is used extensively in toilet powder, crayons and gas tips, but the bulk of the production is required by the manufacturers of paper and paint.

Miners having talc deposits should communicate with the nearest paper or paint factory. It is probable that the exchange of a few letters will make clear whether the deposit can be marketed if it should prove of good quality.

Wenatchee Ships Wolframite

Wolframite ores are being shipped from the vicinity of Wenatchee, Wash. O. B. Brown is one of the active operators in this district, according to information reaching this office.

GEOLOGIST'S TIP FOLLOWED; OIL IS DISCOVERED

The value of structural contouring made by the U. S. Geological Survey in many of the fuel regions, under its investigations, is becoming more and more appreciated. Much attention is being given Survey mapping in or near probable oil localities.

It happens that the dome discovered by geologist Henry Hinds, in the Colchester quadrangles in Illinois, and recommended by him for wildcat testing, notwithstanding its remoteness from other oil discoveries and disregarding the presence of a single dry hole bored many years before in its near neighborhood, was followed by the discovery and development of the Plymouth oil field in western Illinois.

The revised contouring of the Plymouth oil field recently made by the Geological Survey of Illinois, in which the drilling records now available were utilized, shows the essential features of the dome and the apex of the latter to conform closely to the contour drawn by Mr. Hinds. His contour was drawn by no other criteria than the elevation and dips of the rocks in the exposures of the outcrops of the region.

It appears also that the domes and anticlines suggested as promising by Geologist Wallace Lee in the summer of 1914 in the Gillespie and Stanton quadrangles of the same State are being tested by drills with promises of good results.

These quadrangles lay within the interior of the Illinois coal fields, and were mapped mainly on account of the coal contents as a part of the cooperative work of the U. S. Geological Survey and the State Geological Survey, to which the preliminary report of the Illinois work was transmitted for publication and by which it has since been issued.

RUSSIAN PLATINUM EXPERT AT FRONT; NEWS UNAVAILABLE

Serious inconvenience is being felt by those interested in platinum in this country by the absence of Mr. de Hautpick from his regular duty of gathering platinum information in Russia.

Mr. de Hautpick is with the Russian Army in the Carpathians and there is little hope of his taking up his platinum work until after the war.

Mr. de Hautpick has been practically the only source of information as to the platinum industry in Russia. His work has been done very efficiently, and his figures are accepted by the U. S. Geological Survey.

C. B. Dutton, of the Bureau of Mines, has been detailed to work with Dr. Rittman in looking after the Bureau's interest in connection with the work with the Rittman process at the Irvine plant of the Aetna Chemical Company.

Recent Legal Decisions

The statute of Nevada regulating liens on mines and making it the duty of the court on the foreclosure of such liens to declare the rank of each lien and the class of such liens, and this means that in each particular suit for the foreclosure of mechanics' liens on mining property, the court in the judgment must declare the rank or the order of the liens; and if a party to a suit fails to exhibit his lien he waives his rights as to any priority and to have the rank of his claim determined and stated in the judgment.

Daly vs. Lahontan Mines Co. (Nevada), 151 Pacific, 514, p. 516, September, 1915.

A deed conveying the surface of certain mineral lands described, with a reservation to the grantor of minerals and the usual mining rights, and certain parts of a river and creek bank together with a "right to build railroads through such lands in order to reach other lands beyond and above" is not to be limited to the lands when owned by the grantor, as distinguished from those that he might afterwards acquire, where it appears that the grantor was engaged in acquiring mineral lands and in bodying them up so as to make profitable mining propositions, and in such case it will be presumed that the grantor reserved the rights described in the deed in his own interest and in that of his heirs and assigns and for the purposes of the occupation and projects in which he was then engaged; and it would appear to be equally advantageous to reserve the right to build railroads to reach lands to which the grantor never got title, as it might be impossible for him to utilize, either by mining or sale, his lands except in connection with the adjoining lands of others, and it is reasonable that the reservation was intended to cover such lands, as it was probable that the grantor or his heirs might be interested in having served by the railroad, in connection with his own, lands "above and beyond" the lands described; and it seems reasonable that the grantor intended the reservation to be as broad as the necessity, and if the necessity included other lands than those then owned by him, or those thereafter acquired by him, it should be held to extend to and cover such other lands.

Oak Leaf Coal Co., in re, 225 Federal, 126, p. 127, July, 1915.

Where a vendor of mineral lands and mining claims declares a forfeiture under the terms of the conveyance, he cannot thereafter sue and recover for an unpaid instalment of the purchase price.

Croup vs. Humboldt Quartz & Placer Mining Co. (Washington), 151 Pacific, 493; September, 1915.

The statute of Washington (Remington & Ballinger's Code, Sec. 226, subdivision 9), providing that summons may be served on a foreign corporation if it is doing business within the State, does not apply to a corporation organized in the State of Minnesota and conducting mining operations in Alaska, and is maintaining in Seattle in the State of Washington, a purchasing and forwarding agent on a salary, the corporation paying the office rent and expenses, and where such agent has purchased goods, wares and merchandise in the city of Seattle with directions that they be shipped to the defendant corporation at its place of business in Alaska, and where such agent is charged also with the duty of seeing that the goods ordered by the defendant corporation from eastern points or cities are transshipped at Seattle and forwarded to the place of business of the corporation in Alaska, and where such agent does not pay for any goods or disburse any moneys whatsoever, but where moneys are disbursed from the general office of the defendant corporation at places outside of the State of Washington, as in such case the corporation is not doing business within a State.

Johanson vs. Alaska Treadwell Gold Mining Co., 225 Federal, 270; April, 1915.

See *Daly vs. Lahontan Mines Co. (Nevada)*, 151 Pacific, 514; September, 1915.

A mining location under the United States statutes, without discovery of minerals cannot be said to be totally invalid and of no effect, as the title by such location and possession is good as against every person contending against it, except the Government of the United States; and a transfer of such a location gives the transferee the right to proceed to prosecute work with a view of making a discovery of oil and such possession cannot be disturbed by strangers, and is good and the right to such possession is sufficient as a consideration for a lease.

Hullinger vs. Big Sespe Oil Co. (California), 151 Pacific, 369, p. 370; August, 1915.

Where all the men employed in a mine, including the boss driver and his assistant, are subordinate to the bank boss and subject to his orders and control; and where in case of a wreck of trip cars in a mine the bank boss ordered all persons within hearing to assist in cleaning up the wreck and getting the cars

running, and the boss driver being present thereupon ordered his assistant boss driver to aid in cleaning up the wreck, such assistant boss driver is then within the protection of the statute protecting employes against the negligence of an employer, though the particular service is foreign to his regular work.

Republic Iron & Steel Co. *vs.* Quinton (Alabama), 69 Southern, 604, p. 605; July, 1915.

Under the employers' liability act of Oregon (General Laws of Oregon, 1911, Chapter 3, Section 6), contributory negligence of an injured miner is not a bar to a recovery of damages by a miner for an injury resulting from the alleged negligence of the mine operator, but the measure of the loss occasioned by the injury is apportioned ratably between the parties according to their respective want of ordinary care.

Raiha *vs.* Coos Bay Coal & Fuel Co. (Oregon), 151 Pacific, 471, p. 472; September, 1915.

Where placer mining claims were located by a number of persons with the understanding that each of such locators would have an equal interest in all of the land so located, and where it was the intention and understanding of such locators that a corporation would be organized by them for the purpose of developing the claims and that to such company when organized the claims would be conveyed, the stock of the corporation distributed among such persons according to their respective interests in the land to be conveyed, and where such persons subsequently met, organized a corporation under the laws of the State, and subscribed stock in proportion to the amount and value of the land located by each, such locations are held to be valid as the locators under such circumstances located the claim solely for their own individual benefit, and not as mere agents for the benefit of some other persons or of some corporation in which they had no interest; and under their arrangement the corporation, to which it was proposed to transfer the claims, was to be one in which such locators were to be the sole stockholders and each the owner of the equal undivided part of the stock; and it is not a case of dummy locators, lending their names to persons or corporations for the purpose of permitting them to acquire lands.

McKittrick Oil Co., in re, Land Decisions, August 13, 1915.

DIRECTOR SMITH COMPLIMENTED BY WESTERN MINING PAPER

In the October 2 issue of *Mining and Scientific Press*, the following editorial appears:

"We take pleasure in publishing part of an address delivered recently before university students by Dr. George Otis Smith, the director of the Geological Survey. It will be found so interesting as to require no explanation for its publication in our pages, but we may confess that one reason for reproducing a large part of this notable utterance is to show our readers what kind of man

is directing the scientific activities of the Geological Survey. It is a matter of congratulation that he should be a man of clear insight and wide sympathies, a scholar and a gentleman, as well as a clever geologist and an able executive."

FEW TRAFFIC COMPLAINTS FROM METAL MINING REGIONS

It is a matter of comment at the Interstate Commerce Commission that so few complaints are received from the mining districts. This is especially true of the metal mining districts. It means that the carriers have been peculiarly exact in the arrangement of their ore tariffs, or that the shippers are not watching freight rates closely.

In the coal mining regions, however, the commission is being called upon for an increasing amount of adjustment and straightening out of tariffs.

INQUIRERS CROWD BOOTH OF SURVEY AT CHEMICAL SHOW

Dr. Thomas H. Norton, of the Department of Commerce, has written the Geological Survey commending it for its exhibit at the recent Chemical Show in New York City.

Dr. Norton noted that a large group of inquirers always was present in front of the Survey's booth.

As a matter of fact, the Survey's exhibit at the Chemical Show was not at all indicative of the important work being done in this division of the Survey. The chemical work of the Survey does not lend itself readily to exhibition purposes.

JEFFREY MANUFACTURING CO. MAKES IMPROVED FAN

The Jeffrey Mfg. Co., Columbus, Ohio, manufacturers of tippie and coal-mine machinery, have issued Bulletin No. 110 on the subject of "Mine Ventilation," calling particular attention to their new "stepped multi-bladed wheel type of fan," which by means of its stepped series of blades, receives and accelerates the air without shock and discharges it at low velocity, insuring maximum economy of operation. This bulletin also illustrates and describes their line of centrifugal booster fans, and contains valuable data compiled to give the mine superintendent, manager or those interested in this line of work a comprehensive idea of the results obtained from various sizes of Jeffrey mine fans. A free copy of this bulletin may be obtained by addressing the home office of the company at 958 North Fourth Street, Columbus, Ohio, or any of their branch offices.

Recent Patents of Interest to Miners

ASSIGNED TO INGERSOLL-RAND

Coal Mining Machine. No. 1,154,922. This invention is by Charles C. Hansen, of Easton, Pa., and is assigned to the Ingersoll-Rand Co., of Jersey City, N. J.

It relates to coal mining machines and more particularly to a hammer tool of a type having means for adjusting and holding the cutting tool in different operative positions.

The object of the invention is to construct a machine with which the coal cut out in making the undercut can be removed in large lumps without waste, and to accomplish this result the machine consists of a bit shaft which does not reciprocate, but is actuated by the impact of a hammer piston, and is provided with a wedge-shaped chisel bit and with means to turn this bit into four positions and maintain it in these positions without attention from the operator. With this drill a different system of cutting is used, as the bit is first rotated in one place to drill a hole the depth of the desired undercut, and then the coal is broken off toward the hole from four directions, the position of the bit being changed for each direction.

SEPARATES BOULDERS

Ore Disintegrating and Screening Machine. No. 1,156,394. This invention is by George Woodson Crowe, of Santa Cruz, Cal.

The invention relates to improvements in apparatus for treating auriferous gravel or other ore bearing material to disintegrate and screen prior to its subjection to quicksilver in the sluice box riffles. It is particularly desirable for working ore bearing material that cannot be easily subjected to the sluicing operations and which is consolidated by cement so that disintegration by attrition and erosion is necessary.

The invention provides a unitary rotatable shell structure wherein the material in its passage through, is first subjected to disintegrating action and then to a separating, classifying and screening action, so that boulders or larger pieces of material will be separated from the finer pieces.

ASSIGNED TO HOCKENSMITH

Mine Car Wheel. No. 1,154,990. This invention is by Wilbur D. Hockensmith, of Penns Station, Pa., and is assigned to the Hockensmith Wheel & Mine Car Co., of Penns Station, Pa.

The primary object of this invention is to provide a simple and efficient means for holding the closure in open position and out of

engagement with the wall through which the filling opening is formed, thereby relieving the closure of damaging strain when in open position, and also from danger of injury when moving from closed to open position. The improvement also provides efficient means for locking the closure in closed position.

NEW MINE DOOR

Manually Operated Mine-Door. No. 1,155,703. This invention is by Newton K. Bowman, of North Lawrence, Ohio.

This invention has particular reference to an improved construction in doors of the type adapted for use in connection with manways.

It provides a door which is equipped with a sealing strip adapting the door for service as an effectual air barrier and is provided with an operating mechanism so constructed that putters or other pedestrians using the manway may open and close the door either by hand or foot pressure.

The sealing strips are fashioned of canvas or some similar durable fabric, and are so arranged that the air current in the manway will constitute the force normally tending to hold the strips in sealing relation to the door and its frame.

Mr. Bowman claims that this door will embody the essential features of simplicity, durability and efficiency and may be readily and conveniently set up for operation with a minimum expenditure of time and labor.

ASSIGNED TO DORR COMPANY

Ore Classifier. No. 1,156,543. This invention is by David J. Nevill, of Denver, Col., and is assigned to the Dorr Cyanide Machinery Co., of Denver, Col.

It relates to a classifier or dewaterer, which consists of an inclined settling trough in which a rake element has a reciprocating movement to impel the sands settled out of a wet pulp to a discharge opening, while the slimes are maintained in suspension and discharged at the opposite end.

This invention relates more particularly to improvements in the rake element, and in the mechanism for operating and adjusting same. One of its objects is to provide a rake construction by which the transverse gullies produced in the sands on the bottom of the trough by the reciprocating motion of the rake blades, are at the upper end forming a slope to one side for the purpose of draining water carried upwardly with the sand to the lower end of the machine.

It also provides improvements in operating and adjusting mechanisms whereby their construction is simplified and their operation greatly facilitated.

ASSIGNED TO JEFFREY

Safety Device for Power Transmission. No. 1,156,397. This invention is by Henry Beecher Dierdroff, of Columbus, Ohio, and is assigned to the Jeffrey Mfg. Co., of Columbus, Ohio.

The invention relates to safety devices, and has for its object to provide means simply constructed and convenient to use for automatically preventing the transmission of excessive power by a train of power transmitting devices and relieving the other more important parts of the mechanism of undue stress.

The invention consists in the provision of an integral collar or washer-like part of frangible material having a non-circular aperture to fit a non-circular part of a shaft, and having an interlocking engagement with a gear, wheel, etc., sleeved loosely upon the shaft, so that the three parts, shaft, washer and sleeve are held against relative rotation normally, while the relative weakness of the washer insures its breakage and the consequent saving of the other parts when the mechanism is subjected to abnormal stress.

IGNITION METHOD

Apparatus for electrically igniting miners' safety lamps. No. 1,154,992. This invention is by Victor Ernest Joyce, of London, England.

The invention relates particularly to the type of apparatus in which hand driven electricity generating apparatus is employed for providing the current necessary for igniting the lamp. It has for its object an improved construction of apparatus which will be simple, strong and efficient.

The safety-lamp igniter has a combination with a cylindrical casing provided with a partition which separates its end portions into two chambers for a lamp and for an electricity generator. The lamp chamber has a single lateral opening for the introduction and removal of the lamp, and the generator chamber has on one side a means for effecting the working of the generator. It has a cylindrical sleeve which slides longitudinally on the casing, which closes the lateral opening, and prevents the generator from being operated when slid so as to uncover the opening.

MAKES IRON BRICKS

Briquetting ore concentrates. No. 1,155,311. This invention is by Charles F. Hermann, of Scarsdale, N. Y., and relates particularly to the method of forming briquets from iron ore concentrates, and the apparatus for carrying the process into effect in a commercial way.

This invention presents a method of forming a large number of briquets of wet iron ore concentrates preparatory to passing the briquets so formed through kilns of the channel type. By this method material carrying

a varying amount of moisture may be briquetted without being drained and dried in settling tanks. The apparatus includes a means for feeding the wet concentrates into molds or die boxes, means for pressing and dewaterizing the material so that it assumes a form and consistency proper for further handling, and means for stacking the briquets upon the kiln cars in position for being properly burned while passing through the kiln.

ASSIGNED TO AGRICULTURAL RESEARCH CO.

Process for Smelting Zinc. No. 1,154,802. This invention is by Samuel Peacock, of Philadelphia, Pa., and is assigned to Agricultural Research Corporation of New York, N. Y.

It relates to a process of smelting zinc and has for its object the provision of a method by which a larger proportion of the zinc smelted can be recovered as molten zinc than is now possible by present methods.

The process consists in mixing a carbide with zinc oxide in the proportions of one equivalent of carbide to a plurality of equivalents of zinc oxide, and raising the temperature sufficiently to cause a smelting reaction.

INVENTS MINE CAR BRAKE

Mine Car Brake. No. 1,155,964. This invention is by Henry Dow Scott, of Sheridan, Wyo., and relates to brakes for mine cars. Its principal object is to improve mine car brakes so that they are more effective and serviceable.

The invention is the combination with a vehicle body, a pair of axles, a pair of wheels, a rock shaft midway between and parallel to the axles, and cams secured upon the ends of the rock shaft. It also has an arm secured at one end to the rock shaft, lying directly in the plane of the lever connections between the lever and the arm. There is a pair of brake blocks between each pair of wheels.

OTHER PATENTS

Other patents granted were: No. 1,155,311, to Edward Torrey, of Thetford Mines, Quebec, Canada, ore separator; No. 1,151,601, extraction, purification, etc., of metallic zinc from smelter fumes, zinc ores and the like, to Otto Best, of San Francisco, Cal.; No. 1,151,602, to Otto Best, San Francisco, Cal., Hyrometallurgy of zinc; No. 1,156,041, to G. C. Stone, of New York City, apparatus for concentration of minerals by flotation. This invention is assigned to the New Jersey Zinc Co.; No. 1,155,815, to A. H. Higgins and Wm. H. Stenning, of London, England, apparatus for ore concentration; No. 1,155,628, to Sewall Truax, of Cannon City, Colo., method for treatment of zinc ore, assigned to Granadina Mining Co., of Arizona; No. 1,156,382, to R. S. Towne, of New York City, process of extracting metals from ores, assigned to Metallurgical Engineering & Process Corp., of New York, N. Y.; No. 1,156,276, to W. E. Darrow, of Sutter Creek, Cal., Slime thickener for dewatering mine tailings.

Traffic Developments of the Month

While the American Coal and Coke Company lost its case before the Interstate Commerce Commission against the Michigan Central many points of general interest to the coal trade were brought to light in the investigation.

On complaint that the carrier unjustly discriminates against and unduly prejudices complainant by refusal to extend credit to it with respect to freight and demurrage charges accrued on carloads of coal held at Windsor, Canada, and Detroit, Mich., while extending credit to competitors under like circumstances, the Commission held that the evidence fails to show that complainant is discriminated against or prejudiced within the meaning of the act.

Commissioner Clements, who wrote the decision said:

"Complainant is a corporation engaged in buying and selling coal at Detroit, Mich. It alleges that the defendant has subjected it to undue prejudice and disadvantage by refusing to extend credit to it for freight and demurrage charges on coal in carloads consigned to it at Detroit, while extending credit to complainant's competitors under like circumstances.

STORAGE LIMITED

"Coal shipped to complainant from the east moves to Detroit over the rails of defendant via the Niagara frontier and Windsor, a point in Canada immediately across the river from Detroit. Coal dealers in Detroit do not as a rule have storage facilities, but have their coal held in cars until delivery orders are given. In the year 1912 there was serious congestion on the tracks of the defendant in Detroit. To relieve the congestion the defendant established certain terminal yards at Windsor and at points in Detroit. Effective February 15, 1913, it published a tariff which provided that demurrage charges would be assessed on cars held in the Windsor yards to await reconsignment or delivery orders. Coal dealers in Detroit, including complainant, questioned the right of the defendant to collect demurrage on coal consigned to Detroit and held at Windsor. The complainant together with other dealers, refused to pay demurrage charges which accrued on cars held at Windsor until the legality of such charges should be determined.

"The defendant extends credit to coal dealers generally in Detroit to the extent that payment of freight and demurrage charges may be made at the end of stated periods, instead of requiring payment when delivery orders are given from day to day. Complain-

ant was on defendant's credit list for many years. In August, 1913, it was notified by defendant that credit would no longer be given it unless it was more prompt in payment of accruing freight and demurrage charges, and complainant at that time agreed to make prompt payment of all accruing charges. In January, 1914, it was again reminded by defendant of its failure to make prompt payment of both freight and demurrage charges, and it then advised defendant of its refusal to pay demurrage on any account. Complainant's name was stricken from defendant's credit list some time in January, 1914. In a statement of accrued demurrage submitted by defendant, and which the complainant refused to pay, there was the sum of \$199 which had accrued on cars held at other points than Windsor. It also contained items which complainant acknowledged were correct. May 21, 1914, suit was commenced in a State court against complainant by defendant to recover \$1,551 claimed as unpaid demurrage charges.

WINDSOR DEMURRAGE

"Several coal dealers in Detroit have refused to pay varying amounts claimed by defendant to be due as demurrage charges on account of cars held at Windsor, while suits have not been brought against them therefor. Other coal dealers in Detroit, who remained on the credit list of defendant, have paid or have agreed to pay, all demurrage charges except those assessed on cars held at Windsor, with respect to which they have also agreed to pay if the validity thereof shall be established.

"The complainant rests its case upon the showing that its competitors had not paid demurrage charges on cars held at Windsor, and that suits had not been begun against any of them on account thereof. Complainant contends that it has been unduly prejudiced by the removal of its name from the defendant's credit list, and because suit has been brought against it, while its competitors have not been similarly treated.

"The defendant contends that its refusal to give credit to complainant, while extending credit to its competitors, is not prejudicial to the former within the meaning of the act, no matter whether the conditions are similar or not. To support this contention, the defendant cites *Gamble-Robinson Commission Co. vs. C. & N. W. Ry. Co.*, 168 Fed., 161, and *Hocking Valley Ry. Co. vs. U. S.*, 210 Fed., 735. It also contends that no prejudice within the meaning of the act may be predicated on its bringing suit against complainant and not against others.

GAMBLE-ROBINSON CASE

"The full force of defendant's contention is that its refusal to extend credit to one shipper while granting it to another similarly situated cannot be held to violate the law. It was held in the Gamble-Robinson case, *supra*, which was a suit for damages growing out of the refusal to extend credit to the plaintiff company, that an interstate carrier does not subject a consignee to an undue or unreasonable prejudice or disadvantage under section 3 of the act by exacting, after due notice to it, the prepayment of charges for transportation of all property consigned to it, while it does not require such charges to be paid in advance upon freight consigned to others similarly situated. It is urged by the defendant that this holding of the court is controlling here. This we are not prepared to concede. Section 15 of the act provides, among other things, that whenever upon due procedure and after full hearing the Commission shall be of opinion and find that any regulation or practice of any carrier subject to the act is unjust or unreasonable or unjustly discriminatory or unduly preferential or prejudicial it has the power to determine the question and make an order that the carrier shall cease and desist from the violation of the act found to exist. Clearly the Commission has no authority as an independent proposition to require a carrier to extend credit to any of its patrons for charges for its services. However, it has long been a practice of carriers, for the convenience of themselves as well as their patrons, to accept payment of accumulated charges at the end of brief stated periods, and this practice has not been found unlawful. We can not doubt, however, that the all-embracing prohibitions of the law against undue or unreasonable preference, prejudice, or disadvantage apply to this practice as to all others. Not all discriminations are unlawful, but only those that are unjust. Is the discrimination here complained of unjust in the light of facts shown? We think not.

REFUSED TO PAY

"The complainant appears to have refused to pay any demurrage charges, whenever and however accruing. This put complainant in a different attitude from that of other patrons and left the defendant no other reasonable alternative but to demand payment of its lawful charges before delivery of the freight. The fact that suit was commenced against the complainant, and not against its competitors, does not prove undue prejudice within the meaning of the act. The obligation, under penalties of the law, is upon the defendant to collect its established charges from all by such lawful methods as may be suitable and necessary for the purpose.

"Under all the facts shown of record we are of opinion and find that complainant has failed to show that he has been unjustly discriminated against or that he has been unduly prejudiced by the acts of the defendant, of which complaint is made. The complaint will, therefore, be dismissed."

Finds Asbestos Rate Unjust

In the case of the Philip Carey Manufacturing Co. et al., *vs.* Grand Trunk Western Ry. Co. et al., in which complaint was made that rates on asbestos sand in carloads from Robertson, Thetford and Sherbrooke, Quebec, to Lockland and Rockdale, Ohio, are unreasonable and unjustly discriminatory, the Commission held that:

1. Rates in question do not conform to the general adjustment of rates between the Canadian territory of origin and the group in which these destinations are located; the rates on asbestos sand to Rockdale and Lockland are higher than from the same points of origin to Chicago and Milwaukee, while the rates on asbestos fiber from the same points or origin to Rockdale and Lockland are lower than from the same points of origin to Chicago and Milwaukee, the fiber being a lighter loading commodity and much more valuable than the sand. The rates attacked are therefore unjustly discriminatory against complainants.

2. Following International Paper Co. *vs.* D. & H. Co., 33 I. C. C., 270, and cases therein cited, the Commission's jurisdiction in connection with transportation to or from an adjacent foreign country is over that portion of the transportation within the confines of the United States. The Commission cannot, therefore, prescribe joint through rates from points in Canada to points in the United States, but it can control the rates which the lines in the United States charge for services rendered within the United States. Joint rates from and to points in Canada are a convenience to the public and the shippers and should be encouraged. It is therefore expected that the defendants will comply with the finding that the rates to Lockland and Rockdale are unjustly discriminatory to the extent that they exceed the rates contemporaneously maintained to Chicago or Milwaukee by proper readjustment of the present joint through rates. If this is not done an order will be entered requiring defendants that are subject to our jurisdiction to establish in lieu of the present rates joint or local rates from the ports of entry in the United States to Lockland and Rockdale which shall be no higher than those contemporaneously maintained to Chicago or Milwaukee.

Hauto Case Decided

In the matter of allowances on anthracite coal at Hauto and Nesquehoning, Pa., in which the Central Railroad Company of New Jersey proposed by the tariffs under suspension to pay to the Lehigh Coal & Navigation Company certain lateral allowances out of the rates on shipments of anthracite coal from Hauto and Nesquehoning, Pa., the Interstate Commerce Commission holds that the allowances would effect unlawful discrimination and constitute unlawful rebates. The tariffs were ordered canceled.

Hearing at Pittsburgh

A hearing has been assigned at Pittsburgh before Examiner Lahoe in the case of the Pittsburgh & Chicago Mining Co. *vs.* the Baltimore & Ohio R. R.

Prescribes Pig Iron Rates

In the case of the Low Moor Iron Company et al., *vs.* Chesapeake & Ohio Ry. Co. et al., rates on pig iron were prescribed from certain Virginia furnaces to points related to Baltimore, Philadelphia, New York and Boston.

Oil Hearing Cancelled

The hearing scheduled for October 19 at Cleveland, in the matter of petroleum products from Kansas points, has been cancelled. This case is I. & S. 670.

Concessions Denied

Application of the Louisville & Nashville Railway, asking concessions in coal rates to Pensacola, when the coal is destined for bunkering and purposes other than export, has been denied by the commission in its fourth section order No. 5171.

Rehearing Denied

A rehearing has been denied in the matter of rates on coal from mines in Alabama, Illinois, Kentucky and Tennessee, to New Orleans, Memphis and other southern cities. The application was made by the Ohio Coal Operators' Association.

Coal Hearing Cancelled

A hearing set for November 1 in St. Louis, of the case of the Vulcan Coal & Manufacturing Co. *vs.* Illinois Central; the St. Louis Coulterville Coal Co. *vs.* Illinois Central, and the Groom Coal Company *vs.* Illinois Central, has been cancelled. These cases are grouped at I. & S. 6128.

Coal Rehearing Denied

In docket No. 7376, Reeves Coal Company *vs.* Louisville & Nashville Railway, the complainant's request for a rehearing has been denied by the commission.

To Discuss I. & S. 596

A hearing has been assigned for November 4, in Washington before Examiner Woodward to discuss the features of pig iron rates from Virginia furnaces covered by I. & S. 596.

Suspend Wyoming Coal Rates

Proposed increases of rates on coal in carloads from certain mines in Wyoming and Colorado to interstate destinations on the Union Pacific have been suspended until April 28. Briefs in the case have been filed by W. H. Young, of Fremont, Nebr., for the intervenors, and by Carl Whitehead, for the Colorado Coal Co.

Coal Allowances Suspended

It has been decided to suspend until April 15, tariff of the Central Railroad of New Jersey, dealing with certain allowances to be paid the Lehigh Coal and Navigation Co., on coal shipped from Hauto to Nesquehoning. These rates have been suspended previously from June 17 to October 15.

Southern Rates Suspended

Proposed increases of coal rates from mines located on the Nashville, Chattanooga & St. Louis Ry. in Tennessee to points on the Southern Ry. have been suspended until February 4.

Ferromanganese Rate Suspended

Proposed increases of rates on imported ferromanganese in carloads from the eastern seaboard to Portsmouth, Ohio, and other points in Central Freight Association territory have been suspended until April 29.

Coeur D'Alene Rate Settled

Class and commodity rate questions from and to points on the Coeur d'Alene line of the Northern Pacific, have been settled by the commission's fourth section orders Nos. 5168-69.

Peabody Coal Case to Be Heard

A hearing has been assigned for November 26, at Chicago before Examiner Smith for consideration of the case of the Peabody Coal Co., *vs.* Eastern Illinois Ry.

Submits Brief in Coal Case

The Louisville & Nashville Railway has submitted its brief in the Virginia Coal & Coke case.

To Hear Colorado Case

A hearing has been assigned for December 9, in Denver, in the case of the Alliance Coal & Coke Co., *vs.* Colorado & Southern Railway. It will be before Examiner Butler.

Pig Iron Case Assigned

The matter of pig iron rates from Virginia furnaces will come up at a hearing in Washington, November 2, before Examiner Woodward.

Powder House Blown Up

A spectacular explosion took place last month at the Granite mine near Valdez, Alaska. Sixty-seven boxes of gelatine powder were exploded. All the buildings within a considerable radius were badly shaken but no loss of life or serious damage resulted.

The Granite mine is operated by the Granite Gold Mining Company, of which B. F. Millard is president.

PRESIDENT TO CONSIDER THE POINTS MADE BY HERTY

Promises to Accede to Request Made by Council of American Chemical Society

President Wilson has promised to give special attention to information contained in the address of Charles H. Herty, president of the American Chemical Society.

This address deals with cooperation in chemical matters and has a direct bearing upon the economic welfare of the country.

By a vote of the council of the American Chemical Society, it was decided to request the President to give the address special attention. This was done, and the council has been assured that the President will grant this request.

Extracts from President Herty's address follow:

Let me discuss with you cooperation between the American people, through their representatives in Congress, and our chemical industries. I have no leanings toward paternalism, and I believe in the doctrine that a good, stiff struggle for existence is conducive to longevity, but there are certain normal functions of our National Congress which make or mar industrial development, and there are certain undertakings in behalf of the Nation as a whole which individuals can not be asked nor expected to assume.

Recent events compel the conviction that the assumption of our peaceful world relations, which formed the basis of my earlier plea, may be at any moment completely shattered. In such an event the responsibility of all chemists in this country will be added to by the impelling call of patriotism. That the contributions of our science are of the highest value in modern warfare is daily attested in the reportorial accounts of the new developments among the now contending nations. Who would dare say that the innovations of chemistry in the methods of warfare have reached a limit?

In view of this recognized fundamental importance would it not be well, in these days of talk of preparedness, to consider the question of chemical preparedness. Ships, guns and shells are necessary, yes, but most largely as a means to an end, and that end the effecting of a violent chemical reaction at a point more or less distant. Naturally in matters of preparedness there are topics whose public discussion is inadvisable, but there is one to which I do not hesitate to allude, for the facts are all matters of published record, and that is the question of the visible supply of sodium nitrate in this country.

SELF-CONTAINEDNESS

In these days of rapidly shifting international relations the only sound and rational policy is national self-containedness. Blessed with a rich heritage of wonderful and varied natural resources, and, in our isolation, confident of freedom from grave international complications, we have received potash supplies from Germany with but scant forethought, save in the National

Bureau of Soils; and now, today, agriculture is seriously threatened; so too textile manufacturers, reaping a bountiful harvest from the laboratories and dyestuff factories of Germany, have given no helping hand to the struggling young home industry which with a fair show would now have been able to meet the present serious deficiencies. Of far greater importance, at least from the standpoint of preparedness for war, is the fact that at present we are dependent solely on Chili for supplies of sodium nitrate, the crude material for nitric acid, that *sine qua non* in the manufacture of all modern explosives, whether guncotton, trinitrotoluene, picric acid, fulminating mercury or what not.

True, the work of the chemist has shown in later years how to prepare this substance from the nitrogen of the air, but such processes have not been able to compete commercially in this country with its manufacture from sodium nitrate and sulphuric acid. Equally true, we now see no immediate probability of any shutting off of the supply of nitrate from Chili; in the question of preparedness for war, however, probability has no place where certainty can be assured.

It would seem the part of wisdom, therefore, to accumulate, through governmental aid or agency, sufficient extra supplies of sodium nitrate to assure, in case of war, maximum activity of explosive manufactories until sufficient plants could be erected for the adequate manufacture of nitric acid from the air. The annual importation of this material averages 550,000 tons, which represents an investment of approximately fifteen million dollars. The presence of an extra year's supply within our borders might prove of inestimable value. If, happily, the war cloud passes, such accumulations of nitrate would then be gradually absorbed in the more peaceful lines of the fertilizer industry, and the cost of such preparedness be thus limited to the expense of storage and the interest on the funds invested.

PATENTS AND TARIFF

The phrase "chemical preparedness" refers really to the whole question of the status of chemical industry. Have we so grappled with the many questions of material national life that we can await future political developments with quiet confidence and utmost faith? Undoubtedly much has been accomplished, but this is no time for self-congratulation. Far more profitable will it be to look shortcomings squarely in the face, to trace influences which have retarded progress and to endeavor in every legitimate way to overcome such influences. Time does not admit of too extensive treatment of this subject, but there are two matters whose present importance justify further discussion. I refer to the patent system and to our tariff legislation.

The apparently authentic statement that more money is spent in this country to secure and defend patents than is earned from all those issued seems a sad commentary either on the morals of the nation or on the efficiency of the patent system. With a natural unwillingness to admit the first alternative we are forced then to ask wherein lies the deficiency of the patent system?

Primarily, and of greatest importance, is the failure of our people as a whole to understand the purpose of a patent system and its value as a national asset. Its purpose is to foster a creative spirit throughout our citizenry by giving to intellectual rights that legal protection in ownership which is afforded property rights, such ownership carrying with it the right to profit therefrom. He who creates is entitled to remuneration, for by his originality he places the nation in his debt. Such indebtedness is no hardship, for the patentee takes nothing away, but makes his entry in advance on the credit side of the national ledger. That such entries may represent maximum creative ability, it is essential that they be made in an atmosphere of good-will and in full confidence of due and prompt guardianship of the account.

Too often the attitude of the public is one of antagonism to the patentee, and too often manufacturers, pursuing a short-sighted policy, endeavor in every way to evade his legally conferred rights. Is it a worthy thought on the part of "business," that, since inventive genius so often lacks business qualifications, it offers a fair field for commercial piracy? Let us shake off such thoughts and by cooperation seek to promote that creative spirit, the fostering of which lay in the minds of those who founded the patent system.

The value of the patent system as a national asset lies not only in the constant additions to daily welfare, but also in the eventual public ownership of the new ideas underlying these contributions, for the life of a patent is only seventeen years, during which time expenditure both of brain and of funds is necessary to bring the idea to its highest practical development; then the idea legally becomes the property of the nation for unrestrained use. Are we willing that this national asset should be depreciated by an unending tax on the time, thought and finances of composite American genius?

If these general considerations ever find full lodgment in the public mind, there will be no difficulty in securing such congressional action as will perfect the patent system and legal procedures incident thereto, thus enabling it to serve fully those high ends for which it was designed.

WEAKNESS REVEALED

Finally, in the light of the present situation, may we not hope for more generous cooperation between Congress and our chemical industries in solving those innate economic difficulties whose temporary correction can be provided for only through adequate tariff legislation? I realize fully that the trend of national opinion in recent years has been toward a lowering of tariffs, in the conviction that industrial giants were parading in the guise of swaddling clothes, but the present unforeseeable situation, resulting in the cessation of imports from the chemical industries of Germany, has shown to all several strikingly weak links in our industrial chain. We cannot afford such. "National self-containedness" is a more fitting slogan for us now than "Tariff for revenue only." If such links are to be strengthened, we must, as a people, meet the expense by

giving for a reasonable time that measure of protection which will effect a union of capital and scientific skill under no undue stress of unfair foreign interference.

HEADQUARTERS OF BUREAU OF MINES EXPERTS CHANGED

An important change in the Bureau of Mines has been made by Director Manning in stationing the chief mining engineer and the chief chemist in Washington.

George S. Rice, chief mining engineer, formerly has been stationed at Pittsburgh. In the future his headquarters will be in Washington. F. G. Cottrell, chief chemist, has had his headquarters at San Francisco.

It is believed that much more effective service can be done with these men in constant touch with the Director and the various experts of the Bureau who are stationed in Washington.

HOPES TO SEE NEW COPPER ASSOCIATION FORMED

In commenting on the passing of the Copper Producers' Association, B. S. Butler, in charge of copper at the Geological Survey, says:

It is hoped that some new organization may be formed, in which not only the condition of the producing but also the consuming end of the industry shall be represented at frequent intervals, so that there shall be no undue advantage but rather a mutual helpfulness in regulating the industry to the best advantage of all concerned.

TOPOGRAPHIC MAPS GREAT AID IN CASE OF WAR

Another asset possessed by the topographic maps made by the United States Geological Survey which is not usually known among their advantages is the service that such maps would give in case of war.

Similar preparations by the French and German geological organizations have proved to be of the greatest service in conducting the campaigns in northern France. The French topographers have carefully mapped the whole of that republic and many of the areas in which fighting is being conducted were mapped in great detail.

No Withdrawals or Restorations

An unusual thing happened in September in that there were no withdrawals or restorations of public lands during the month.

Pleased with Mining Congress Journal

B. F. Millard, president of the Granite Gold Mining Co., of Valdez, Alaska, writes as follows:

"I am certainly pleased with your MINING CONGRESS JOURNAL. It is a great source of information to the mining man."

GOLD DISCOVERING DEVICES CONTINUE TO SELL BRISKLY

It is a matter of considerable wonder how venders of certain useless devices find a market for their product. The sale of contraptions whereby it is claimed gold and silver and other minerals may be located, is apparently continuing profitably.

Most of these devices are based upon magnetic properties which the venders claim are possessed by the metals sought.

Iron, nickel and some other minerals containing these metals are magnetic. Instruments have been devised to prospect for iron by the use of this characteristic property.

Iron deposits, as a rule, are the only ones sufficiently magnetic to be discovered by this means. Gold, silver, lead, copper and zinc ores are not magnetic and there is no instrument that will indicate the presence of these metals or their ores when they are hidden from view beneath the ground. Such instruments are offered for sale, as a rule, with an intent to defraud.

These well-known truths seem not to have reached the eyes and ears of a considerable number of persons, judging from the increased business that is reported in instruments of this character.

Put Gauging Stations on the Columbia

International gauging stations are being established on the Columbia and other rivers forming the boundary between the United States and British Columbia. The Geological Survey and the authorities of British Columbia are cooperating in this work.

Boston Branch in New Quarters

The recently authorized Boston branch of the Geological Survey has occupied its permanent quarters in the Custom House, and all stream gauging in New England will be directed from this office. Maine, Massachusetts and Vermont are cooperating with the Survey in this work in those States.

Mendenhall—Boutell

W. C. Mendenhall, chief of the Land Classification Board of the Geological Survey, was married to Miss Alice Boutell, of New York, September 20. Mr. and Mrs. Mendenhall will be at home at the Ontario Apartment, in Washington, after November 15.

After the ceremony, Mr. and Mrs. Mendenhall spent three weeks in the Lake George country of the Adirondacks.

Mr. Mendenhall is a native of Marlboro, Ohio, but has been a resident of the West and Alaska since completing his schooling. He is a graduate of Ohio Northern, Harvard and Heidelberg.

He began his service with the Geological Survey in 1894 previous to the completion of his education. In 1908 he was made head of the Division of Underground Waters, and in December, 1910, became head of the Land Classification Board.

Mr. Mendenhall is widely known among mining men throughout the West, as he has worked in nearly every State, although he perhaps is known best for his Alaskan work.

Survey Does No Assaying

Attention is called by the United States Geological Survey to the fact that it does not make analyses or assays of ores or metals for the public.

Many specimens and samples are received by the Survey, accompanied by requests for assay or analysis. It is impossible for the Survey to comply with such requests. The most it does is to give an offhand opinion based on a simple examination of the specimen.

If an assay is desired the proper course is to employ a private assayer. The specimen can be sent to one of the Government assay offices, where a regular charge is made for such work.

In sending specimens to the Survey for examination applicants should be particular to state whether they wish them returned, as otherwise they are destroyed.

OUTSTANDING WITHDRAWALS TOTAL 58,609,823 ACRES

Summary of withdrawals and restorations during the period March 4, 1913, to September 30, 1915, in acres:

	<i>Outstanding withdrawn March 4, 1913</i>	<i>Withdrawn during period</i>	<i>Restored during period</i>	<i>Outstanding withdrawn Sept. 30, 1915</i>
Coal	65,410,464	334,979	17,363,097	48,382,346
Oil and gas.....	4,817,706	529,654	538,619	4,808,741
Phosphate	3,367,378	443,932	1,150,934	2,660,376
Potash	133,829	211,384	3,200	342,013
Power site.....	1,857,258	541,970	164,906	2,234,322
Public water.....	86,216	98,431	2,622	182,025
Totals	75,672,851	2,160,350	19,223,378	58,609,823

EARLY EFFORTS OF THE GOVERNMENT TO AID MINING WERE UNSYSTEMATIC

First Mining Land Laws Were Disregarded Almost Entirely—North Carolina Established Geological Survey in 1825—Lewis and Clark Expedition Gathered Facts as to Minerals of Every Kind

Inadequate as is the government aid given the mining industry a tortuous course was followed before any systematic help was extended.

The first attempt at a governmental geological survey was made by the State of North Carolina in 1825. Geological surveys were afterward established by Massachusetts in 1830, by Maryland in 1834, and by Virginia in 1835, the same year in which the first national geological survey—that of Great Britain—was organized. Other States of the Union subsequently established geological surveys, as set forth in Bulletin 465 of the United States Geological Survey.

Most of the national topographic and geologic surveys or explorations made by the United States prior to March 3, 1849 when the Interior Department was organized, were carried on under the War or Treasury Department. The most notable of the earlier surveys, and the first Government survey of the West, was the Lewis and Clark expedition of 1804-1806, planned by President Jefferson and carried on under his supervision. A brief account of this expedition is given in Bulletin 611 of the United States Geological Survey, on pages 47-50. The expedition was instructed to gather information on a great variety of subjects, including "the soil and face of the country, its growth and vegetable productions; the animals of the country, and especially those not known in the United States; the mineral productions of every kind, but more particularly metals, limestone, pit coal, saltpeter, salines, and minerals . . . ; volcanic appearances; and climate." The first official report of the results of this expedition is included in a message sent by President Jefferson to Congress, dated February 19, 1806.

OTHER EXPEDITIONS

Other early explorations, also planned by President Jefferson, were those made by Lieut. Zebulon M. Pike, in 1805-1807, to the headwaters of the Mississippi and to the Southwest. A brief account of Lieutenant Pike's expedition to the Northwest is given in Bulletin 611 of the United States Geological Survey, on pages 20, 21.

The best known of the earlier geological surveys or surveys that involved or included the examination of geologic features are as follows:

In 1819-20 Maj. Stephen H. Long, under the direction of John C. Calhoun, Secretary of War, made an expedition from Pittsburgh to the Rocky Mountains. With him were associated Thomas Say, entomologist, and Edwin James, botanist and geologist. The accounts of the expedition contain numerous references to the geology of the region. The route lay from Pittsburgh down the Ohio to its mouth, up the Mississippi to St. Louis, and northwestward to Council Bluffs; thence westward along the Platte and South Platte to a point a little west of the one hundred and fifth meridian and north of the thirty-fifth parallel, across to Arkansas River, which was followed down to a point a little east of the one hundred and fourth meridian, where the party divided, one returning by the Arkansas and the other by Canadian River.

In 1820 Henry R. Schoolcraft, acting under direction of Governor Lewis Cass, of Michigan, who was himself acting under authority of the Secretary of War, made a trip along the Great Lakes, and to the sources of the Mississippi, the results of which, with general notes on the natural history of the region, were published in 1820.

REPORTS ON MISSISSIPPI VALLEY

In 1821 Schoolcraft was a member of a second expedition authorized by the general Government to explore the central portions of the Mississippi Valley, the results of which were published in 1825. In 1822 he also reported to the general Government on the extent and value of the mineral lands on Lake Superior, and again in 1832 resumed and completed his explorations of the sources of the Mississippi.

In 1823 Maj. S. H. Long received orders from the War Department to make an expedition for a general survey of the country in the vicinity of the Great Lakes and the sources of the Mississippi; to prepare a topographic description of the country; to ascertain the latitude and longitude of all the remarkable points; to investigate the products—animal, vegetable, and mineral—and to inquire into the characteristics and customs of the Indians. The route of the expedition began at Philadelphia and led through Wheeling, W. Va., to Chicago by way of Fort Wayne; thence to Fort Crawford and up the Mississippi to Fort St. Anthony and the source of St. Peters River; thence to the point of

intersection between Red River and the forty-ninth parallel; along the northern boundary of the United States to Lake Superior, and thence homeward by the Great Lakes. Although not intended primarily as a scientific survey it was accompanied by Thomas Say, zoologist, and William H. Keating, mineralogist.

In July, 1834, G. W. Featherstonhaugh was authorized by Lieut. Col. J. J. Abert, acting under instructions of the War Department, to make a geologic and mineralogic survey of the "elevated country lying between the Missouri River and Red River, known under the designation of the Ozark Mountains." The survey was made and a report was published February 17, 1835.

GIVEN ANOTHER COMMISSION

In 1835 Featherstonhaugh, again under instructions from Lieutenant Colonel Abert, made a geologic reconnaissance of the region lying between the seat of government and the Coteau des Prairies, by way of Green Bay and the Wisconsin Territory. His report was issued in 1836.

After 1807 all Government lands containing ores were reserved from sale and a system of leasing was adopted, but no leases were issued until 1823 and little mining was done before 1826. For a few years rents for the mining lands were paid by the operators with comparative regularity, but after 1834, in consequence of the innumerable fraudulent entries of lands as agricultural, which should have been reserved as mineral, the smelters and miners refused to make any further payments, and the United States officers were entirely unable to enforce the claims of the Government. In consequence of these difficulties the following resolution was adopted in the House of Representatives, February 6, 1839:

"That the President of the United States be requested to cause to be prepared, and presented to the next Congress at an early date, a plan for the sale of the public mineral lands, having reference as well to the amount of revenue to be derived from them and their value as public property as to the equitable claims of individuals upon them; and that he at the same time communicate to Congress all the information in possession of the Treasury Department relative to their location, value, productiveness, and occupancy; and that he cause such further information to be collected and surveys to be made as may be necessary for these purposes."

REPORTS ON LARGE AREA

In accordance with this act David Dale Owen was appointed Government geologist under direction of the General Land Office (then an office in the Treasury Department, James Whitcomb, Commissioner) to make surveys in Iowa, Wisconsin, and northern Illinois. The district explored comprised about 11,000 square miles lying in equal por-

tions on both sides of the Mississippi, between parallels 41° and 43°, beginning north of Rock River and extending thence north more than 100 miles to Wisconsin River. Owen's first published report bore date of April 2, 1840.

In 1844 Douglass Houghton, in association with W. A. Burt, devised a plan for connecting the linear surveys of the public lands of the United States with the geologic and mineralogic surveys. On the recommendation of the General Land Office (Treasury Department) Congress appropriated funds for the purpose, and Houghton was appointed to undertake the work. According to the plan adopted Mr. Burt was to take charge of running the township lines of the Upper Peninsula, the subdivisions were to be made by deputy surveyors, and Houghton was to have the directorship of the entire work. The rocks were to be examined, and observations were to be made as to the general geologic and topographic features of the country. The system had been fairly organized and the field work of one season had been nearly completed when, on October 13, 1845, Houghton was drowned, during a snowstorm, while making his way in an open sailboat along the west shore of Lake Superior.

OWEN AGAIN SENT OUT

In 1847 D. D. Owen was again employed by the Treasury Department, under the immediate supervision of General Land Commissioner R. M. Young, to make surveys in the Chippewa district of Wisconsin and the northern part of Iowa.

In accordance with an act of Congress approved March 1, 1847, Dr. C. T. Jackson was appointed by R. J. Walker, then Secretary of the Treasury, to make a geologic survey of that portion of Michigan lying south of Lake Superior and north and northwest of Lake Michigan. As in previous operations of like nature by Owen, the object of this survey was to ascertain which of the lands should be classed as mining lands and which as agricultural. Jackson spent two seasons in this work and then resigned, for reasons which seem to have been in part personal and in part political. The completion of the work was confided to his assistants, J. W. Foster and J. D. Whitney. Jackson's report was published in 1849.

Reports or accounts of some other national surveys were made between 1804 and 1849, the year in which the Interior Department was created.

AN IMPORTANT ASSIGNMENT

An important survey made after the Interior Department was organized, was the "Exploration and survey to ascertain the most practicable and economical route for a railroad from the Mississippi River to the Pacific Ocean," made under the direction of the Secretary of War in 1853-1854. The report of this Survey comprises thirteen quarto volumes and contains information on the geo-

graphy, geology, and natural history of the region traversed.

The immediate precursors of the United States Geological Survey were the Hayden, King, Powell, and Wheeler surveys, whose reports are listed and indexed in Bulletin 222 of the United States Geological Survey. These surveys had no permanent offices and no assurance of existence beyond the single year for which they with difficulty managed to obtain appropriations.

COMMENDS WAY FOREST SERVICE IS CONDUCTED

Member of Forestry Relations Committee Speaks Highly of the Manner Work in West is Progressing

Unstinted praise for the Forest service of the Department of Agriculture is given in a recent communication from J. W. Deane, of the Forestry Relations Committee of The American Mining Congress. Mr. Deane's letter is as follows:

It is gratifying to those of us who believe in the right employment of the natural resources, their reasonable preservation, the elimination of ruthless waste, to note the increased and increasing satisfaction with the Forestry administration. Trails through the great mountain reaches, lookout stations and telephone communication, have conserved immensely from fire destruction of the timber stands. The very fact of known supervision, the placarded warnings and requests, have led to greater care by hunters and campers and have attached responsibility to the enjoyment of the splendid privileges whose exercise has not been abridged but has been enhanced by that supervision and that responsibility.

Also there has been through the feeling of greater safety a wider employment by families of the free privilege of use. These are factors in health and in happiness. The careful culling has made an appreciable revenue for good road purposes without impairment of this vast estate of all the people. Consciousness of ownership in and the right to use go to the making of better citizenship. The friction has disappeared. Insolence of irresponsible forest freebootery has about vanished, while bumptiousness of overzealous and incapable foresters has gone its way through the better standards of qualification the department requires.

Conditions because of their reasonableness are generally accepted. Calls for mediation and intervention are infrequent.

Incipient fires are quickly discovered or are reported seasonably. New growth has been promoted, danger from rubbish has been eliminated, and the people are coming into a just pride in their widest possession, their "boundless contiguity." The "lodge in some vast wilderness" is within the reach of the everyday man, thanks to the Depart-

ment of the Interior and its distinguished Commissioner. Wider knowledge of that privilege must be promulgated. The employment betters citizenship. There is no patriotic stimulus like sense of ownership. The best-governed are they who participate in the governing.

Respect has taken the place of sneering. Realization of amplification of privilege instead of restriction is manifest.

What is true of the Mt. Sopris forest and its management is true in varying degrees of the other forests. Stubbornness as to grazing has gone with the disposition of the test case, and the defeated are glad of their defeat, because crowding has disappeared, monopoly by the strong has been overthrown. By the segregation of areas the sheep and cattle wars with their atrocities have come to an end.

As an asset the supervised forest is of greater worth than the neglected and the pilaged, just as cultivated land is worth more than wild land. The gradual release of the portions capable of tillage has been intelligently wiser than sweeping release could have been. Protest is hardly audible anywhere. The stupid appeal to prejudice, the allegation of discrimination in favor of the East as opposed to the rights of the West, is no longer effective. That sort of demagoguery has run its course in the main, though there are yet a few who try to employ it politically.

What service has more strongly impressed the greater worth of "liberty under law?"

Finishes Big Horn Basin Work

Charles T. Lupton, chief of the party of the Geological Survey assigned to the Big Horn Basin, has completed the year's work and, with Mrs. Lupton, is spending a month on a pleasure trip on the Pacific coast.

Mr. Lupton has completed the examination of a large area for oil and gas in the eastern Big Horn Basin. This includes a reconnaissance of the western side of the basin. He has brought up to date the information regarding the Grass Creek oil field, which is the most important newly discovered oil area in the Rocky Mountains.

BOY SCOUTS STUDY FIRST-AID FROM MINERS' CIRCULAR No. 8

The national organization of Boy Scouts finds that miners' circular No. 8, issued by the Bureau of Mines, which deals with first-aid, contains just the information it would impart to its members.

Acting in this connection the entire membership of the scout movement was requested by postal card to apply to the Bureau of Mines for this bulletin. As a result the Bureau of Mines is receiving thousands of requests for this publication from all parts of the country.

STORY OF LOST QUICKSILVER MINE IS NOT ACCEPTED

Geologist Knopf in Report on Nevada Cinnabar Explodes Interesting Tale— Tells of New Property

Adolph Knopf, of the U. S. Geological Survey, does not take much stock in the story of the lost Hawthorne quicksilver mine supposed to have been near Mina, Nev. He gives reasons in a recent report for his belief that the fruitless year-after-year search of Judge Hawthorne for the mine he had found but could not relocate after losing his bearings is a myth.

A portion of Mr. Knopf's report, which is now ready for distribution, reads as follows:

"A belt of cinnabar deposits is situated in the Pilot Mountains, in an air line eight miles south of east of Mina, Esmeralda County, Nev. The average elevation above sea level here is 7,300 feet, or about 2,700 feet above Mina, the local supply point, which is on the Southern Pacific system. The deposits are accessible from Mina by a good wagon road of easy grade about twelve miles long. The area in which the quicksilver deposits occur supports sufficient forest growth to furnish wood for local use as fuel and contains a number of springs that are capable of furnishing an ample domestic supply of water. The topographic features of the district and its approaches are shown on the scale of 1:250,000, or approximately four miles to the inch, on the United States Geological Survey's map of the Tonopah quadrangle.

"The discovery that drew attention to the cinnabar of Pilot Mountains was made in June, 1913. On the day of the discovery Thomas Pepper and Charles Keough had been tracking two stray steers, when near nightfall the trail led over an old prospect in which a face of limestone traversed by small veinlets of red mineral was exposed. The red mineral was recognized by Keough as cinnabar. After finding the steers and taking them to Mina, the two discoverers returned to Cinnabar Mountain, as the hill on which they had made the find has since been named, where they spent ten days in careful search and located seventeen claims. On June 18 they went back to Mina and made known their find, causing an intense excitement, and that afternoon almost every citizen of the town left for the site of the discovery by automobile and by other less expeditious conveyances. A large number of claims were staked by the first comers and many more were afterward staked by claimants from Tonopah. Unfortunately, the amount of exploratory and development work has not been proportional to this early enthusiasm.

"The discovery was widely heralded as the rediscovery of the 'lost Hawthorne quicksilver mine,' named for Judge Hawthorne, in whose honor it is said Hawthorne, the seat of Mineral County, is named. According to local

report, Judge Hawthorne discovered in the seventies a rich quicksilver deposit, which is believed to have been situated at the site of the recent discoveries. In returning from the mountains, so it is said, Hawthorne lost his bearings, and, although he attempted annually to the end of his life to find the 'quicksilver mine,' he remained unsuccessful. This tradition seems highly improbable. The original discoverer—who he was is unknown—had done some very substantial exploratory work on the prospect. In his efforts to prove his find he had blasted out a considerable mass of solid limestone, and as further tokens of his activity sticks of powder, fuse, and picks lay abandoned at the prospect. That this energetic prospector lost his way and was unable to find the prospect at which he had labored is not easily credible. It is more likely that he abandoned the prospect as, in his judgment, not sufficiently valuable.

"The newcomers have found considerably richer deposits than the unknown pioneer did, and have shown that the cinnabar extends along a considerable belt.

GENERAL GEOLOGIC FEATURES

"Cinnabar has been found at a number of places along a belt that is about two miles long and trends northeastward. The main area comprises the hill known as Cinnabar Mountain. Limestones make up the bulk of this hill, although some dolomitic graywacke, composed of angular and rounded quartz grains and of angular chert particles embedded in a cement of dolomite, is interstratified with them. The strike ranges from north to northeast, and the dip from 40° to 70° NW. The limestones carry crinoid fragments and other obscure fossils, and are probably of Paleozoic age. North of Cinnabar Mountain graywacke, slate, and chert form the country rock. No igneous rocks, in either dikes or flows, have been found near the mineral deposits. Tertiary lavas appear on the north flank of the mountains, but they are four or five miles from the cinnabar belt.

"The cinnabar deposits on Cinnabar Mountain occur in fracture zones in limestone. The limestone is traversed by thin veinlets of white spar, and the cinnabar is intergrown with the calcite or dolomite of the veinlets or occurs as a replacement of the adjoining wall rock. The intimate penetration of the cinnabar into the body of the limestone is locally a notable feature. Stibnite is associated with the cinnabar at one locality only; pyrite and marcasite, characteristic associates of quicksilver ores the world over, do not occur in the district.

"The geologic features of the quicksilver deposits north of Cinnabar Mountain are somewhat different. At the Cinnabar King prospect the ore consists of cinnabar in a gangue of barite and the deposit is inclosed in a country rock of brecciated chert. Farther north, at the Red Devil prospect, the country rock is graywacke and the cinnabar is disseminated through a siliceous gangue.

"Although highly encouraging showings of cinnabar ore have been uncovered at a number of places in the district, the amount of prospecting so far done is insufficient to prove that the linear extent of any deposit, let alone its persistence in depth, is great enough to indicate its commercial importance. The geologic features of the deposits appear to be favorable to persistence of the ore in depth of the grade and character of that at the outcrop, for the mineralization is obviously of a kind in which the deposition of the cinnabar was not dependent on immediate proximity to the surface, as it is, for example, in quicksilver deposits that are formed at the vents of hot springs.

"The prospects at which the most exploratory work has been undertaken will now be described.

RELATION TO QUICKSILVER BELT

"The existence of a quicksilver-bearing belt in western Nevada, in Humboldt, Esmeralda, and Nye counties, has long been recognized. The information concerning the cinnabar deposits of this belt has recently been assembled by McCaskey, who contributes also a description of the ore bodies at Lone, in Nye County, the locality from which the principal production has so far been derived. The deposits east of Beatty described in the present report extend the quicksilver belt considerably farther south.

"The general tendency of those who have described the deposits of this belt has been to regard them as genetically connected with the Tertiary and Quaternary volcanism of the province. The phenomena observable at Steamboat Springs support this conjecture. The hot waters issuing from these springs deposit a siliceous sinter which contains cinnabar and amorphous red antimony sulphide, together with lesser quantities of other metallic sulphides. According to Becker, the deposits have formed close to the edge of a basalt flow and probably result from the volcanic action of which the lava eruption was one manifestation. He believes that the water issuing from the springs comes from the Sierra Nevada; that it descends to great depths, where it becomes heated by contact with subterranean masses of hot basalt, and ascends along the fissures by which the lava reached the surface. Concerning the genesis of the other quicksilver deposits of the western Nevada belt, opinions have been less precisely formulated, although, as already mentioned, these deposits also are regarded as of 'volcanic origin,' but probably this term is now used in a sense different from that which Becker had in mind.

"It is difficult, however, to show that some of the deposits are related to the Tertiary volcanism of the province. Ransome, in fact, is inclined to regard the quicksilver deposits of the Humboldt Range as of early Cretaceous age. The same difficulty inheres in any attempt to connect the cinnabar deposits east of Mina with Tertiary eruptive activity. On the other hand, it is interesting to note that a

quicksilver deposit clearly of Tertiary age, occurs in the volcanic rocks at Goldfield, which is midway between Mina and Beatty. The deposits near Beatty are rather obviously associated with the Tertiary volcanism of that region. This association raises an important problem, for in the Bullfrog district, a few miles west of Beatty, the gold deposits, according to Ransome, are genetically connected with this same general outburst of volcanism, though it was not found possible to link the ore deposition with any particular one of the many magmas that solidified as the lavas now exposed in the district. Among the most noteworthy facts shown by the study of the district is the remarkably feeble chemical alteration of the wall rocks of the ore bodies; and it was therefore concluded that the vein-forming solutions were dilute, cool, and under no heavy pressure. Now the notable feature of the quicksilver deposits in the rhyolites east of Beatty is the intense alteration of the rocks—their complete silicification and alunitization in belts hundreds of yards long and as much as 200 feet wide. This profound alteration points to the conclusion that the quicksilver-bearing solutions were under physical and chemical conditions quite different from those that prevailed during the deposition of the auriferous ores. From these considerations and from others arising from a review of the literature of the subject it appears that the genetic relation of the cinnabar deposits to the many gold deposits scattered through the western Nevada quicksilver belt constitutes an interesting problem for future research."

Discuss Gasoline Vapor

The inflammability of mixtures of gasoline vapor and air is discussed by G. A. Burrell and H. T. Boyd in Technical Paper 115, just issued by the United States Bureau of Mines.

The authors in their conclusions say in part: "Two methods for determining the content of gasoline vapor in air are discussed. One has to do with the introduction of the mixture into an exhausted glass vessel, cooling it at the temperature of liquid air, removal of the air, and finally the measurement of the partial pressure of the gasoline vapor by means of a manometer attached to the liquefaction bulb.

"Another method consists in burning the gasoline vapor in oxygen and, from the contraction and carbon dioxide produced, calculating the percentage of gasoline vapor."

Kansas Has Satisfactory Year

Kansas reports some reduction in its coal production for 1914. On the whole, however, the year was a satisfactory one, for coal men, as no serious strikes or floods of pits took place during the year. The total production was 6,824,068 tons in 1914. There were 12,413 men employed in Kansas coal mines, during the year.

VIRGINIA COAL FIELD PROMISES TO BECOME HEAVY PRODUCER

**Extensive Study of District Being Conducted
By United States Geological Survey
and State Authorities**

Work is being pushed on a report being prepared by the Geological Survey on the Virginia coal fields. Four years of field work have been done in this region, in cooperation with T. K. Harnsberger, of the Virginia Geological Survey. Henry Hinds has charge of the Survey's portion of the work.

Owing to the increased importance of this field, due to the entrance of a railroad, it is desirable to get this information to the public at the earliest moment. Field work has not yet been completed. A more detailed survey is being made than ever has been undertaken previously in this part of the Appalachians.

The great coal field of southwest Virginia contains one of the largest untouched areas in the United States. As a rule the coal is high grade and cokes well.

A part of the field just has been opened by the extension of the Carolina, Clinchfield & Ohio Ry. An allied concern, the Clinchfield Coal Corporation, owns huge areas of coal lands which cover the greater part of three counties. Preparations have been made for working this coal field upon a large scale. It would have been under way before this

time had it not been for the demoralizing effect of the war on the coal trade.

The new railway connects the coal field with the Chesapeake & Ohio at Elkhorn City. The field has an outlet to the Ohio Valley on the west and reaches tidewater at Charleston, S. C., where it is expected to become a factor in the trade moving through the Panama Canal.

It is predicted by the Government experts that this field eventually will become one of the big producers of the United States.

There are still two years of geological work to be done in this field.

MUTE MEMORIAL TO DR. HOLMES IN MISSING MINE CIRCULAR

Librarians through the country make frequent requests of the Bureau of Mines for miners' circular No. 1.

It seems not to be generally known that this number was left open for a bulletin to describe the work of the Bureau of Mines. The late Dr. Joseph A. Holmes, former director of the Bureau, intended to make this circular as strong and as comprehensive a piece of writing as was possible. On account of other more pressing matters, Dr. Holmes never was able to write the circular.

As a mute memorial to the late director, it is the intention of the Bureau never to publish miners' circular No. 1. The number is to be left open in memory of the man who gave his life to his work.

UNCLE SAM is conducting a multitude of activities which have a bearing on mining. Men engaged in this industry cannot afford to be out of touch with this work.

The Mining Congress Journal, the official organ of the American Mining Congress, is covering the Washington field carefully in its news columns. It offers a ready means of keeping you informed as to the efforts the Government is making in your behalf.

It is important not to forget that matters develop in the capital which menace your best interest. It is advantageous to know of these things in time to counteract them.

The Mining Congress Journal covers Congress, the Bureau of Mines, the Geological Survey, the Interstate Commerce Commission, the Supreme Court, the Land Office, the Patent Office, the Department of Labor and the other Federal offices where the work affects the mine owner or operator. State mining legislation and current decisions are featured. There are many other interesting features as to mines in the Journal.

Can you afford to be without this service?



PROGRESS IN CLASSIFICATION OF MINERAL WATERS IS MADE

Dr. Chase Palmer Departs from Used Channels of Reasoning and Economic Results are Obtained

Classification of mineral waters, which are merely solutions of mineral substances, has occupied the attention of chemists since the beginning of the last century.

They have never succeeded in classifying waters according to mineral contents, in such a way as to secure consistency of thought or expression. The reason for it is that as soon as a substance dissolves in water it undergoes some sort of chemical change. A natural water, which is a resultant solution of several compounds, is a very complex thing.

From 1887 to 1894, the American Association for the Advance of Science maintained committees instructed to obtain from every source, suggestions which would lead to classification of waters. Their attempts were futile. In 1894 the association discharged its last committee, and the subject never had been taken up again until Dr. Chase Palmer, of the United States Geological Survey, published a bulletin on the geochemical interpretation of water analyses.

BASED ON NEW IDEAS

This interpretation is based upon entirely new ideas. It is not based on the amount of the substance dissolved in a natural water, nor on the amounts of the constituents of substances which may, or may not, have been separated from one another when the substances themselves are dissolved in the water.

Every chemist knows that when a substance dissolves in water, it matters not whether it is changed from a solid to a liquid, or whether it undergoes any other physical change. Still the chemical capacity of every constituent of that substance to react with other substances remains unchanged, and must be considered if the chemical qualities of the solution, which is a mixture, is to be understood.

This capacity for reaction is called, technically, "Reaction Capacity" and it is upon reaction capacities that all the constituents of every substance are made the basis of the characterization, comparison and classification of all natural waters.

A SUM OF PROPERTIES

By this fundamental principle of chemical science applied to a water solution, a solution is considered directly a product of an aggregate of chemical properties.

It is known also that different waters contain different amounts of constituents—that is, difference in concentration.

To make it possible to compare waters of different concentration, according to their properties of reaction, it is necessary to reduce all the properties to a common basis.

This is done simply by using 100 as the basis for comparison.

Water is reduced to five classes. No water has more than three reaction properties. It can be ascertained readily if water comes from granite, limestone, volcanic or other kind of rocks. No difficulty is experienced in distinguishing between the water originating in the granite country of the Appalachians and that coming from the limestone regions of the Middle West.

HAS ECONOMIC APPLICATION

There are great possibilities for judging water with respect to its utility for economic use. It can be ascertained readily if water has been associated with petroleum.

Knowledge of the contents of water is very useful in the study of the result of changes which take place in mines which already have been worked, as well as the study of it as an agent producing deposits of valuable ores.

Knowledge of this kind enables a certain geologist in Oregon to tell of the presence of limestone hundreds of miles away, high in the mountains. By using this principle, he knew, despite the fact that he had not been there, that towering into the air above the western plateau was the same character of rock which is buried a thousand feet under the earth in Ohio. In either case they represent the remains of waters of some sea existing in early geologic times.

The capability of many applications of the principle set forth by Dr. Palmer is exciting considerable interest through the country. It already has been made the basis of several technical reports.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

Complying with the postal law of August 24, 1912, THE MINING CONGRESS JOURNAL submits the following information to its readers: THE JOURNAL is published monthly at 526 Munsey Building, Washington, D. C. Editor, J. F. Callbreath; Business Manager, J. F. Callbreath; Publisher, The American Mining Congress; Owners, The American Mining Congress—Carl Scholz, Chicago, Ill., president; Harry L. Day, Wallace, Idaho, first vice-president; M. S. Kemmerer, New York City, second vice-president; George H. Dern, Salt Lake City, Utah; third vice-president; J. L. Callbreath, secretary. There are no security holders. (Signed) J. F. Callbreath, Editor. Sworn to and subscribed before me this eleventh day of October, 1915, P. H. Hill, Notary Public.

BUREAU OF MINES RESCUE PRACTICES APPEAL WIDELY

Several railway companies and industrial concerns have been sending representatives to the Bureau of Mines rescue cars with the idea of learning more as to their rescue practices. Many features of mine-rescue work are equally applicable to other industries. Men in charge of the cars have been instructed not to limit their instruction to miners but to include any other industries, as the Bureau is anxious to extend this humanitarian work whenever possible.

ALASKAN WATERS TO BE CHARTED BY NEW GEODETIC SURVEY SHIP

The contract for the construction of a new United States Coast and Geodetic Survey vessel has been awarded by Secretary of Commerce Redfield to the Manitowoc Shipbuilding & Dry Dock Co., located on Lake Michigan, at Manitowoc, Wis. The contract price was \$189,000 for the bare hull and machinery, but the ultimate cost of the vessel fully equipped will be \$220,000.

The new vessel will be named the *Surveyor* and will be used in surveying and charting the dangerous waters of Alaska and the Bering Sea in the summer and the coasts of Washington, Oregon and California in the winter.

The *Surveyor* will be a steel steamer of about 1,000 tons displacement, with triple expansion engines and will use crude oil as fuel. She will accommodate sixty-six officers and men and carry enough fuel and stores to stay at sea on a surveying cruise for about three months at a time without returning to her base of supplies.

According to the terms of the contract, the *Surveyor* must be completed within one year, but Vice-President West, of the Manitowoc Company, who came to Washington to consult with E. Lester Jones, superintendent of the United States Coast and Geodetic Survey, about the construction of the vessel, says she will be finished in much less time, possibly as early as the first of next August, which will leave ample time to take the vessel to the Atlantic coast before the close of navigation in the Great Lakes.

A remarkable feature of the award of this contract lies in the fact that a shipbuilding company located on Lake Michigan should build an ocean-going vessel destined for service in Alaska. This brings home the important commercial fact that after all the Great Lakes extending far into the interior of the American continent are for all practical purposes a part of the Atlantic Ocean. It also speaks well for the enterprise of the shipbuilding company which is to build the vessel.

Secretary of Commerce Redfield is much pleased at the prospect of getting the new vessel ahead of time. He considers the charting of the waters of Alaska a vital part of the work of his department.

50,000 Electric Mine Lamps in Use

The Bureau of Mines' estimate places the number of portable electric mine lamps in service at 50,000.

President Gets Guide Books

Special bound volumes of the new guide books, being issued by the Geological Survey, are being sent to the President.

SAFETY FIRST IDEAS TO BE PROMOTED IN VERSE

Booklet of Rhymes to be Given to Every School Child in the United States

There is a boy in our town,
And he is very wise;
He always stops and listens,
And uses both his eyes.
He's never in a hurry
To get across the street,
He'll never get run over,
Because he is discreet.

This is one of the verses in a little book that the Safety First Federation of America Convention, which met in Detroit recently, will take measures to have placed in the hands of every school child in all of the country as the first step in a Safety First campaign for school children. Boards of Education will be asked to cooperate to the extent of having teachers read the warnings, verses, and stories and have the children memorize the rhymes of good advice, which go on to say about the careful "Safety First" boy:

He knows about the trolley cars
And how a boy can fall;
He knows about the fender,
Which may not work at all.
He knows about the autos,
When he is out at play,
And always takes precautions
Upon the great highway.
He knows about the dangers
That threaten everywhere,
And how it is important
That he should have a care.
He knows if he were injured
His mother's heart would break,
And so his rule is safety first!
For his dear mother's sake.

Ever since the inception of the Safety First Federation its officials have planned to have a danger educational campaign in the schools. For the last six months experts under the direction of Darwin P. Kingsley have been working out plans.

TWO VALUABLE TECHNICAL WORKS ADDED TO LIBRARY

Two rare sets of scientific literature just have been added to the library of the Geological Survey. They are the Journal of the Institute of Metals of London and the Transactions of the Sessions of Water Engineers of London. The former contains thirteen volumes and is one of the very few sets in the United States. The latter consists of nineteen volumes and probably is the only set in America. It is valuable particularly for those interested in water resources. It deals extensively with underground waters. Many features of important interest to miners and geologists are presented.

PORCUPINE DOME, IN MONTANA, FAVORABLE FOR OIL OCCURRENCE

Due to the interest that is being taken in oil exploration in Montana an examination of the Porcupine Dome, in Rosebud County, was made by C. F. Bowen, of the U. S. Geological Survey. In his report Mr. Bowen sets forth this conclusion:

"The presence or absence of oil or gas in the Porcupine Dome field can be demonstrated only by thorough and systematic exploration with the drill. The only positive statement that can now be made regarding their possible occurrence is that the structural and stratigraphic conditions are favorable for their accumulation. The most promising place, in the opinion of the writer, for testing the field is near the crest of the uplift; that is, on the divide between Porcupine and Little Porcupine Creeks, probably in Tps. 10 and 11 N., R. 38 E., because the underlying sandstones come nearest to the surface there and because the water encountered in the sandstone 3,200 feet below the mouth of the Vananda well is believed to saturate that stratum, and would therefore force the oil and gas, if present, to the crest of the anticline. The mouth of the Vananda well has an altitude of 2,704 feet above sea level. As the water encountered in the sandstone at the 3,200-foot level rose within 50 feet of the surface, the water level in this sandstone is about 2,650 feet above the sea, and hence if oil occurs in the sandstone it would be expected to occur at or below that level. Nothing is known of the attitude of the rocks so far below the surface, but if they are approximately parallel to those at the surface, it is probable that the water-bearing sandstone does not reach an altitude of much more than 2,650 feet in any part of the dome; therefore it is a fair inference that the water-bearing sandstone is completely saturated with water, and if it contains oil or gas they will be found at the crest of the sandstone and near its upper surface. For this reason it is advisable to drill near the axis of the dome, which, as suggested above, is probably in Tps. 10 and 11 N., R. 38 E. It cannot be emphasized too strongly that the existence of oil or gas in this field is at present merely conjectured from the favorable structure and the fact that formations of the same age and character as those represented here are known to contain oil in other places. Under these circumstances nothing but systematic and intelligent exploration should be undertaken and all haphazard ventures should be discouraged, at least until some conclusive results have been obtained."

Other Lamps to be Approved

Investigation of the portable electric miner's lamp is continued at the Bureau of Mines and at least two other makes of lamps are practically ready for approval.

OZOKERITE NOT NECESSARILY PETROLEUM INDICATION

There seems to be a common impression that the presence of ozokerite on the surface indicates the presence of petroleum beneath. That this cannot be taken as a positive indication is indicated by the following statements upon the subject by O. B. Hopkins, of the Geological Survey:

"The presence of ozokerite at the surface may be considered as an indication of the presence in the underlying rocks of hydrocarbons, of which petroleum is one of the common types. Seepages of the heavy residue from petroleum may occur along the outcrop of the porous beds which contain it, or along fault lines which make possible its upward circulation from beds far below the surface. In either case, the presence of heavy hydrocarbons at the surface cannot be considered as the proof of the presence of petroleum in commercial quantities in underlying rocks at that immediate locality. The collection of petroleum in commercial quantities depends on a number of factors, of which geologic structure is an important one.

"It is impossible to state at what depth oil may be found in the eastern part of North Carolina. Oil usually occurs in certain recognizable horizons in the various fields, and from a study of the geology of the neighboring territory it is often possible to forecast the depth to the supposed oil-bearing beds. In North Carolina, however, there are no known oil-bearing horizons, and thus their presence has to be demonstrated before it is possible to forecast the depth at which they may be found."

To Work Arizona Asbestos

Owing to the increasing price of asbestos, active operation of a property near Globe, Ariz., will be begun by H. P. Wightman and Earle Pierce.

Samples of asbestos from this deposit sent to Government and other experts for examination have been pronounced of exceptionally fine grade.

The development of asbestos deposits will play an important part in Arizona's future, some engineers predict.

Report on New Jersey Geology

The geology of New Jersey is the subject of a painstaking report just issued by the Geological Survey of New Jersey. It is the work of the State Geologist, Henry B. Kummel, and J. Volney Lewis. The work is quite technical but fills a long felt want for greater detail of New Jersey formations.

SCIENTISTS COOPERATE TO STOP THEFTS OF PLATINUM

Various thefts of platinum have been reported recently from laboratories in different parts of the country.

With the increasing price of platinum it is considerably more valuable than gold, and apparently a means of disposing of the metal has been found.

Scientific men are taking steps to make such thefts unprofitable. In one case a laboratory assistant who was found guilty of stealing platinum practically has been excluded from all laboratories of the country, due to the very effective advices which were sent broadcast as to the man's proclivities.

Platinum is so necessary to laboratory work that a considerable supply of it must be carried in stock. It must be in almost daily use. In many cases laboratories have had a decided struggle to secure the means to buy the necessary platinum, and it seems most unfortunate that such institutions have been preyed upon by those of burglarious tendencies.

VALDEZ REGION SOON TO BE PRODUCER OF COPPER

The U. S. Geological Survey recently has issued a bulletin on the gold and copper deposits of Port Valdez, Alaska. The report describes the distribution, geologic relations, and characteristics of the mineral deposits of this district. The mineral resources of this district comprise deposits of gold, silver and copper. Gold and silver have been the only metals recovered from the ore in this district, but recent developments indicate that the Midas mine on Solomon Gulch will soon become a copper producer. Last year nine mills were operated in the Port Valdez district, and it is estimated that between 250 and 300 men were engaged in mining at one time or another during the year.

PRESIDENT CREATES DINOSAUR MONUMENT IN UTAH

President Wilson, upon recommendation of Secretary Lane, has issued a proclamation creating the Dinosaur National Monument in Utah. Within the monument are reefs of Juratrias rocks bearing Dinosaurian and other gigantic reptilian fossils, declared by scientists to be among the most interesting and valuable in the world. These fossil remains exemplify some of the extraordinary forms of early reptilian life on the globe. It was felt by Secretary Lane that the wonderful formations should not be lost to science by haphazard and unauthorized excavations of vandals or mere speculators, but should be protected until this Government has in its own great National Museum a full representation of the principal and most extraordinary types.

PRINCE WILLIAM SOUND HAS 8 COPPER AND 2 GOLD MINES

The lode-mining districts of Prince William Sound may in a general way be grouped into two concentric belts, concave southward, the outer one including the gold quartz districts and the inner one including the copper camps. The copper mines produce also large amounts of gold or silver, or both; and the gold mines produce also some silver. The ores of the gold quartz districts are free milling. The copper ores are smelted at Tacoma, Wash., and their content of valuable metals is recovered during this process. The metallurgic treatment of the gold quartz ores is performed locally in small stamp or roller mills, with amalgamation; the concentrates are shipped to the Tacoma smelter. A much larger tonnage of copper ore than of gold quartz ore is mined and treated, and the total value of the metals produced from the copper ores is about five times that obtained from the gold quartz ores. The only placer deposits in the region are gold placers, and these are found only in the gold quartz districts and have been little developed.

The productive mines of the Prince William Sound region in 1914 included two copper mines and eight gold mines. Most of the gold mines were in the Port Valdez district. Besides these properties, a prospect on Knight Island made a small shipment of copper ore to Tacoma, and the Golden Eagle stamp mill, at Golden, is said to have been in operation a few days in the fall. This information is from B. L. Johnson's recent report to the Geological Survey. Mr. Johnson has made a careful inspection of this district.

NORTH DAKOTA LAND IS TO BE OPENED TO HOMESTEAD ENTRY

Upon the recommendation of Secretary of the Interior Lane, the President has signed a proclamation opening to homestead entry over 100,000 acres of land in North Dakota. These lands were formerly within the Fort Berthold Indian Reservation, and have been reserved from disposition because of their containing coal. The lands will be classified without regard to their coal value, as agricultural land of first and second class, grazing land and timber land, and appraised accordingly. The appraised price must be paid in addition to meeting the requirements of the homestead law. The coal in these lands will be reserved to the Government and the homestead entryman will receive patent for the surface only unless it be shown that the land does not contain coal. The coal deposits are subject to disposition under the coal-land laws in effect at the time of such disposition.

By the terms of the proclamation these lands will not become subject to homestead entry until late in the spring of 1916.

PERSONALS

John C. Hoyt, hydraulic engineer, in charge Division of Surface Waters, United States Geological Survey, has returned to Washington after a two months' inspection trip in Montana, Idaho, Washington, Oregon, and southeastern Alaska.

D. C. Winchester has returned from an extended field trip in the oil shale region of the West.

J. P. Dunlop, of the United States Geological Survey, has left for a trip through Missouri, Arkansas, Oklahoma, and Kansas to collect data on lead and zinc. He will inspect particularly the new mills, new mines and new plants in general. Before returning to Washington he will visit the zinc district of Wisconsin. This work will require the remainder of the year.

W. C. Phalen, of the United States Geological Survey, made a trip to New York last month to secure information for the next mineral resources report.

R. B. Marshall, chief geographer of the U. S. Geological Survey, will return to Washington November 15, after several months in the field.

E. W. Parker, head of the Information Bureau of the Anthracite Coal Companies, was in Washington October 6, en route to Philadelphia to attend the meeting of the Board of Directors of the coal companies.

William M. Welch has received a permanent appointment as gas engineer for the Bureau of Mines and has been assigned to field work.

Willard C. Cope has been promoted to the position of chief of the explosives chemical laboratory of the Bureau of Mines.

Ernest L. Tarof has been appointed a junior explosives engineer in the Bureau of Mines.

Guy B. Taylor has been named assistant explosives chemist at the Bureau of Mines, Pittsburgh station.

E. R. Lloyd, vice-chairman of the Coal Board of the Geological Survey, was called to West Virginia early in October by the death of his father.

D. A. Lyon, of the Salt Lake office of the Bureau of Mines, is making splendid progress in his investigations of the chloridizing, roasting and leaching process for the recovery of lead from low-grade ores.

D. D. Condit, of the Geological Survey, is spending a few weeks in Ohio bringing up odds and ends in recent mapping in that State.

H. S. Stabler was acting chief of the Land Classification Board last month in the absence of W. C. Mendenhall.

C. J. Hares, who has been engaged in oil investigation in Wyoming, will make coal examinations in Montana before returning to Washington.

W. B. Emery, of the Geological Survey, has returned from field work in Wyoming, where he has been engaged on oil classification work in the Big Horn Basin.

J. W. Swift, of the account section of the Bureau of Mines, is introducing an auditing system in the western offices of the Bureau.

R. A. Dye, recently named clerk to the mine inspector of Alaska, has left for Juneau to take up the duties of this position, which was provided for by the last Congress.

Sydney Paige, of the United States Geological Survey, is still working in the Tyrone district of New Mexico.

J. F. Hunter, of the United States Geological Survey, has joined Adolph Knopf in his study of the mother lode of California.

Where Assays Are Made

The Geological Survey is being called upon continually to make assays. Commercial assays are not made by the Survey.

If an assay is desired the proper course is either to employ a private assayer or chemist, addresses of many of whom may be found in the technical journals, or to send the specimen to one of the Government assay offices, which are located at Philadelphia, New Orleans, Carson City, Nev.; Seattle, Wash.; Boise, Idaho; Helena, Mont.; Deadwood, S. Dak.; Salt Lake City, Utah; Charlotte, S. C., where a regular charge is made for such work.

CHIEF GEOLOGIST WHITE INSPECTS FIELD WORK

David White, chief geologist of the U. S. Geological Survey, has returned from a trip during which he visited all of the field parties engaged in fuel investigation in Illinois, western Kentucky, Oklahoma, Nevada, California, Texas, southwestern Virginia and Pennsylvania.

Mr. White also participated in a conference with H. S. Gale and others with reference to the progress of boring and other investigations in search of potash.

AMERICAN MINING CONGRESS

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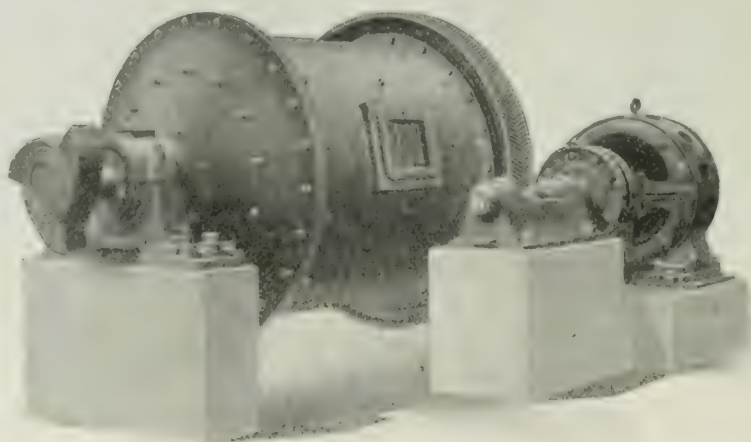
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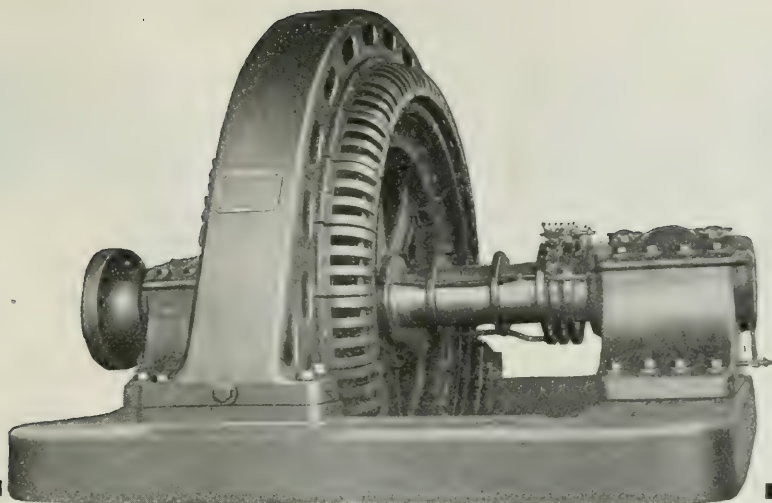
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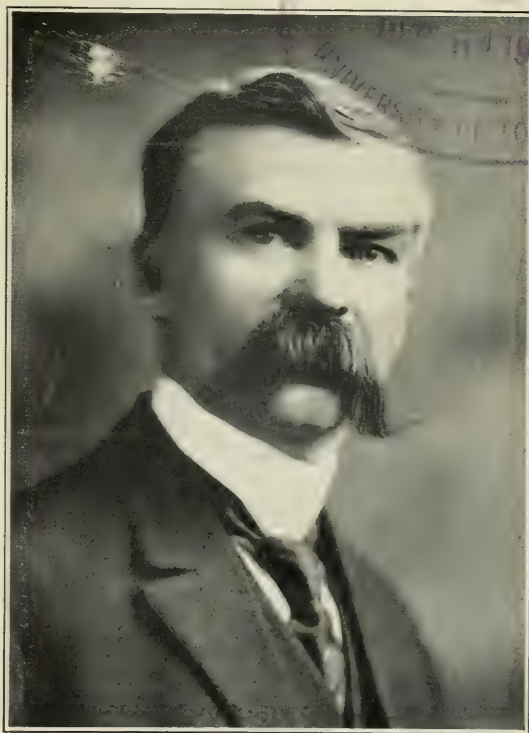
THE MINING CONGRESS JOURNAL

VOL. I

SAFETY-EFFICIENCY-CONSERVATION

DECEMBER, 1915.

No. 12



SENATOR THOMAS J. WALSH

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CONTENTS

1915

To Revise Mining Laws.....	643	Diamond Bearing Rock.....	667
Fire Burns Thirteen Years.....	646	Geologists to Meet.....	667
Molybdenum Experiment.....	646	Coal Most Valuable Mineral.....	668
Possible Source of Potash.....	647	Honored at Pittsburgh.....	668
May Not Accept Private Work.....	648	Editorials.....	669
Work on Piedmont Region.....	648	Take Iron Pyrite for Gold.....	674
Test Not Infallible.....	648	Map Work Handicapped.....	674
Pan-American Scientific Conference.....	649	Handling Long Mailing Lists.....	674
Withdrawals of Public Lands.....	652	Supreme Court Decisions.....	675
Survey Examinations.....	652	Cobalt Prices Drop.....	678
Coal and Peat Described.....	652	Senator Walsh Speaks.....	679
Coal Strike Threatens.....	653	Potash Explorations.....	680
Interest in Molybdenum.....	654	Burro Mountain Development.....	680
Potash from Brines.....	654	Traffic.....	681
Paper in Maps.....	654	Banquet to Director Manning.....	683
Copper Prospects.....	655	Montana Power Company.....	685
Location of Tungsten Mines.....	656	Legal Decisions.....	686
Demand for Antimony.....	656	Tungsten Uses.....	687
Mexican Asphalt.....	657	Indiana First-Aid Meet.....	687
Prepares Guide Book.....	657	Ransome on Arizona Quicksilver.....	688
Marketing Ores in U. S.....	658	Missouri Alumni.....	688
Ore Conservation Study.....	659	Coal for South America.....	689
Jeffrey Opens New Office.....	659	Commonwealth Finds New Ore Body.....	689
Reduction of Antimony Oxide.....	660	Couer d'Alene Study Postponed.....	689
Industry Being Stabilized.....	660	John Day Valley.....	690
Eastern Gold Mines.....	660	North Carolina Coal.....	690
Selby Commission Report.....	661	Fertilizer Publications.....	690
Spelter Corner Rumor Unbelieved.....	662	Platinum Output Increase.....	691
St. Francis Mountains Oldest.....	663	Advance Maps.....	692
Old Camp Being Reopened.....	663	Gold in Pennsylvania.....	692
Patents.....	664	October Mine Accidents.....	693
Tennessee Oil Field.....	666	Influences Canadian Geologists.....	693
A Manufacturing Industry.....	666	Personals.....	694

The American Mining Congress

The American Mining Congress is a voluntary association supported by the dues and fees of its members. It is striving to bring about:

First—Safety and efficiency in mining operations.

Second—Intelligent conservation with a view to the highest development and use of our mineral resources.

Third—The stimulation of investment in practical mining operations by showing that mining is a legitimate business when intelligently conducted.

Fourth—Uniformity in state laws governing mining operations carried on under like conditions.

Fifth—Such federal co-operation through research and investigation as will furnish the basis for intelligent state legislation, and will solve those problems of economical production, treatment and transportation which are essential to an increase in mineral production.

Sixth—The improvement of the economic conditions underlying the coal mining industry.

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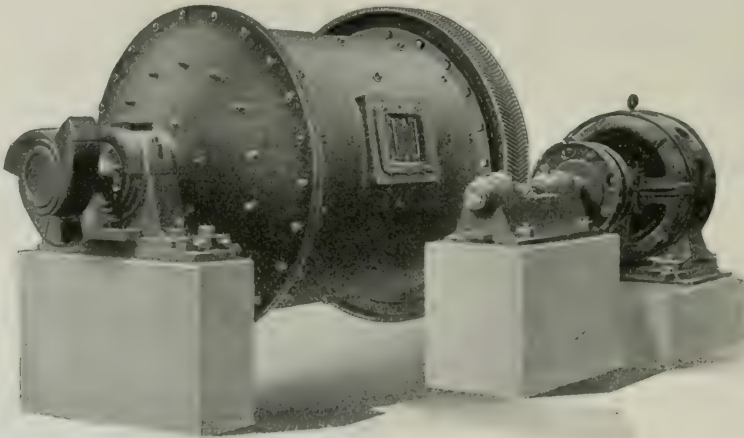
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THE MINING CONGRESS JOURNAL

Official Organ of the American Mining Congress

REVISION OF MINING LAWS TO BE URGED AT MEETING IN WASHINGTON

Mining and Metallurgical Society of America Calls Together Representative Mining Men From all Parts of Country—Hopes to Impress Congress with Need of Prompt Legislation

A large number of prominent mining men are expected to gather in Washington, December 16 to urge upon Congress the necessity for a revision of mining laws. The meeting was called by the Mining and Metallurgical Society of America. The following rules for the conduct of the convention have been adopted:

The meeting to comprise three sessions, the first beginning at 10 a. m., the second at 2 p. m., and the third at 8:30 p. m.

The meeting to be organized with the president of the Mining and Metallurgical Society in the chair. The presiding officers in the several sessions to be the presidents of the Mining and Metallurgical Society of America, the American Institute of Mining Engineers, and the American Mining Congress, or representatives of those organizations.

A committee on credentials, three members, to be named by the Mining and Metallurgical Society of America.

The several sessions to be open to all persons interested in the mining industry, but the right of voting to be limited to accredited delegates and other persons especially invited.

Credentials to be: (1) Membership in the societies invited; (2) Representatives, one each, of chambers of commerce especially invited. Representatives, one each, of operating mines in the United States, provided that any such mines have no representation through membership in a society, or otherwise. Representation in all cases to be limited to citizens of the United States. Credentials to be passed upon by the committee on credentials, whose decision will be final.

A committee on rules, three members, to be appointed by the chairman.

A committee on resolutions, five members, to be appointed by the chairman.

All resolutions to be submitted to the committee on resolutions.

The committee on rules to have the right to make provisions limiting and concluding debates, if necessary.

Persons attending the meeting are requested to register in the record book that will be provided for the purpose. Official headquarters will be in the Raleigh Hotel; registration in the United States Bureau of Mines; meetings in the auditorium of the United States National Museum.

MINING CONGRESS ACTIVITIES

While the American Mining Congress has had more important work to do in the interest of the mining industry than urging the revision of mining laws, it has given this matter considerable attention. Its committee on the revision of mining law consists of the following:

E. B. Kirby, St. Louis, Mo., chairman; L. V. Ray, Seward, Alaska; Will L. Clarke, Jerome, Ariz.; E. H. Benjamin, San Francisco, Cal.; Victor C. Alderson, Denver, Col.; J. H. Richards, Boise, Idaho; Wm. Scallon, Helena, Mont.; Horace V. Winchell, Minneapolis, Minn.; D. C. McDonald, Ely, Nev.; C. T. Brown, Socorro, N. Mex.; H. H. Schwartz, Portland, Ore.; Isador Broman, Austin, Tex.; W. H. King, Salt Lake, Utah; L. K. Armstrong, Spokane, Wash.; Edwin Hall, Lusk, Wyo.

This committee submitted the following report to the Mining Congress September 22 of this year:

"The American Mining Congress inaugurated and has for some years been leading, the

movement for a general revision of the Mineral Land Laws of the United States.

"The present laws framed in 1872 are 40 years behind the times. They have never conformed to the facts of geological structure and are not adapted to present methods of prospecting, developing or financing mining properties. The widespread dissatisfaction of the mining public with them has long been expressed through every means at its command. Judges, lawyers, engineers, geologists and mining men of every class have been pointing out the various faults and evils of the present code. Distinguished men, technical journals, mining and engineering societies have again and again voiced their criticisms and discussed methods of reform, but all without effect upon an indifferent government at Washington.

"There was no relief in sight until the American Mining Congress undertook to concentrate all effort towards reform upon the creation of a commission which should visit the mining communities and secure the results of their experienced judgments as a basis for intelligent revision by Congress.

"The movement toward this has steadily grown until the administration and Congress were obliged to recognize it and last year a bill for a revision commission was approved by the Secretary of the Interior and passed by the Senate. A similar bill in the House was favorably reported by its committee on mines and mining, but was hung up by the pressure of other business and Congress adjourned without taking action. Since then the war and its complications have absorbed the attention of Congress, of the administration and of the general public. Under these conditions, it was understood that any effort to push mining law revision at the last Congress would be labor wasted and that this reform, like other measures for international improvement, would have to be held in suspense during the present storm.

"Meanwhile, the forces back of the revision movement have steadily grown in strength. The two great organizations of the mining professions, the American Institute of Mining Engineers and the Mining and Metallurgical Society of America, are supporting the movement to the limit of their ability, but the American Institute of Mining Engineers has been restricted by provisions in its constitution which prevented it from taking up public questions. The desire to secure revision, however, was so overwhelming as to raise the whole question of freedom of action for the institute with the result that the restrictions were removed at the time of its last annual meeting in February and it is now free to devote its energies to the cause.

"It is the intention of your committee not to press matters while the present tension exists at Washington, but to move vigorously in cooperation with the other societies mentioned as soon as the friends of revision in Congress advise that action is practicable. It is now probable that this time will arrive during the coming session. Having so nearly at-

tained success last year, it is intended to press forward at the first opportunity.

"The following draft of bill adopted by the American Mining Congress for recommendation to Congress is one which, after several years of experience, was designed to harmonize the many conflicting views and to minimize criticism and opposition so far as possible. It seems to have accomplished this so far as any suggestion to Congress can do so and has been the basis for the actual bills framed by the Senate and the House Committees."

DRAFT OF BILL

A preliminary draft was suggested for a joint resolution of the Senate and House as follows:

"That Congress shall undertake a general revision of the laws relating to mineral bearing lands and mineral rights within the United States and Alaska and such revision shall cover mineral deposits of every kind except those of coal, phosphates and salines, which have been set aside as the subjects of other and special legislation.

"In view of the technical nature of the problems presented by the work it is desired to secure first the results of the knowledge and experience which exists among those who are engaged in the mining industry.

"To this end the President shall, within sixty days hereafter, appoint a commission of five members who shall be selected for their recognized knowledge and experience in the mining industry.

"The commission shall consider the mining laws of this and other countries and shall hold public hearings in the principal mining centers of the Western States and Alaska, giving full opportunity for the expression of public opinion concerning the problems before it. Its recommendations shall be presented in the form of a fully drafted mining code.

"Within six months after the appointment of the commission its report shall be delivered to the President who shall within 30 days thereafter transmit it to Congress with his further recommendations if there be any.

"Members of the commission shall receive per diem with expenses and shall engage such clerical assistance as may be necessary for the work."

This clause providing for the necessary funds also was inserted in the committee's report:

"Your committee desires again to impress upon the American Mining Congress that the recommendations of the Congress upon any matter, to be effective, must be properly presented at Washington and this requires steady, persistent work by some one who can stay there. Its secretary must, therefore, be given the means with which to carry on his work there in the proper way. This is absolutely necessary to supplement the efforts of your various committees who can only act through correspondence and the occasional visits of their members."

REVISION OF MINING LAWS

Resolutions adopted by the Utah Chapter of the American Congress are:

WHEREAS, Experience has demonstrated conclusively that the present mining laws of the United States, as written, interpreted and construed, cause conflicts, disputes, litigation and loss; do not afford sufficient and proper encouragement and protection to those who seek to develop the mineral resources of the Nation; make it needlessly difficult to obtain and hold titles to mineral lands and to obtain capital for their development; and are inimical to the best interests of the industry in other ways, and

WHEREAS, Previous efforts to obtain the legislative action necessary to correct inadequacies and evils of the present laws have failed of result chiefly because the representatives of the mining industry have not presented its legislative needs with sufficient unanimity, particularity and vigor to the Congress of the United States and the executive and administrative officers of the National Government, and

WHEREAS, The subject has been thoroughly and intelligently investigated and studied by a capable committee of the Mining and Metallurgical Society of America, which has adopted the following program recommended by said committee:

1. The mining law should be revised not piece-meal, but thoroughly so as to coordinate and harmonize its various provisions.

2. A statute of limitations should establish a reasonable term of years beyond which placer patents shall be immune from attack on the ground of fraud.

3. Full privilege of appeal to some competent court of law should be provided for in all cases of contests between rival claimants, or between a locator and the Government.

4. Notice of mining locations should be so recorded as to give the fullest possible public notice.

5. The law of the apex should be abolished.

6. Existing titles should be reaffirmed and fully recognized and no effort should be made to create retroactive legislation.

7. For the purpose of giving the fullest consideration to the needs of very branch of the mining industry and every section of the country, it is desirable that a Government commission be created by act of Congress, whose duty it shall be to investigate by every proper means the questions and interests here referred to, and to make recommendations as a basis for the proposed mining law revision; and

WHEREAS, The said Mining and Metallurgical Society of America has called a general convention of representatives of the mining industry of the United States to meet at Washington, D. C., December 16, 1915, there to consider and act on the said program and to devise ways and means most effectively to present the desired legislative action to the Congress of the United States, and

WHEREAS, It appears vitally important that all mining interest join in support of the movement hereinbefore set out, therefore, be it

Resolved, By the Utah Chapter of the American Mining Congress:

1. That the movement to obtain revision of the United States mining laws be indorsed and the program proposed therefor by the Mining and Metallurgical Society of America be indorsed as to its general plan, subject to such changes as may hereafter be proposed or favored by this Chapter.

2. That the Executive Committee of this Chapter be directed and empowered to take such steps as may in its judgment seem necessary and proper to have the mining interests of Utah represented at this convention.

3. That the Senators and Representatives of Utah in the Congress of the United States, the Governor of Utah and the commercial and industrial bodies of the State be urged to give their fullest support to the efforts made to obtain revision of the mining laws of the United States.

Delegates to Mining Convention

The following delegates have been appointed to attend the mining convention to be held at Washington, D. C., December 16, 1915, under the auspices of the Mining and Metallurgical Society of America:

E. B. Kirby, 120 Broadway, New York City; Van H. Manning, U. S. Bureau of Mines, Washington, D. C.; Dr. George Otis Smith, U. S. Geological Survey, Washington, D. C.; Dr. A. H. Brooks, U. S. Geological Survey, Washington, D. C.; Hon. J. W. Thompson, U. S. Bureau of Mines, Washington, D. C.; R. A. F. Penrose, Jr., Bullett Building, Philadelphia, Pa.; Prof. Charles E. Munroe, George Washington University, Washington, D. C.; H. W. Hardinge, 50 Church Street, New York City; Sidney Jennings, 42 Broadway, New York City; S. A. Taylor, Second National Bank Building, Pittsburgh, Pa.; Carl Scholz, 139 West Van Buren Street, Chicago, Ill.; J. F. Callbreath, Munsey Building, Washington, D. C.; Clyde A. Heller, Bullitt Building, Philadelphia, Pa.; Thomas Dolan, U. G. I. Building, Philadelphia, Pa.; N. H. Wheeler, Penn Building, Philadelphia, Pa.; Will A. Clark, Jerome, Ariz.; Walter Douglas, New York City, and H. S. Munroe, New York City.

Thanks Director Manning

A formal resolution has been passed by the Mining and Metallurgical Society thanking Director Manning, of the Bureau of Mines, for the assistance he has given in aiding them in arousing interest in the revision of laws meeting to be held in Washington this month.

FIRE HAS BURNED IN ARIZONA MINE FOR MORE THAN 13 YEARS

There is a portion of the United Verde mine at Jerome, Ariz., that has been on fire for the past thirteen years and has defied all efforts to put it out. That portion of the mine is bulkheaded off and the rest of the property is working along as though no fire existed. The fire is visible from the surface through the smoke escaping through seams and openings, according to Charles F. Willis, of the Arizona Bureau of Mines.

What is actually happening is that the sulphur is burning off from the copper ore and the chemical reaction that takes place produces heat to such an extent that all efforts to put it out have been failures. The copper that is left in this portion of the mine is actually enriched by the loss of the sulphur.

A few years ago it was desired to get some of this high grade copper ore and a system of mining the burning ore was devised and is being successfully carried out. By means of bulkheads, firedoors, curtains, etc., the fire zone is segregated and air is pumped in under pressure. This not only serves to ventilate the drifts but blows or drives the fumes of the sulphurous gases back into the ground and the air in next to the fire is not at all uncomfortable. True it is hot and the rock that is being worked is so hot many times that it cannot be handled by the bare hands, but the men work in these places very satisfactorily and the ore is being extracted with a profit.

The United Verde is a property with one ore body, bought in the eighties for \$30,000, and it is rumored that \$100,000,000 was recently refused for the property. The ore body is massive, about 700 feet long by 2,000 feet wide and the depth yet to be determined. They possess a model town of Clarkdale and a model smelter. The property has paid in dividends over \$37,000,000, the greater part going to one man, the principal stockholder, Ex-Senator W. A. Clark.

The fact that the mine has many years more to operate is evidenced by the recent expenditures of the company for the improvements at Clarkdale costing about \$6,000,000 and doubling the capacity of their former plant. Although all Arizona has a good reputation for its treatment of labor, this property has a particularly enviable one, and it is believed that this fact has been largely responsible for its success.

Reports on Peat Resources

The Geological Survey of Wisconsin just has issued a comprehensive volume dealing with the peat resources of the state. It is by Frederick W. Huch.

Minnesota is preparing a report on its peat resources.

PURE MOLYBDENUM CANNOT BE MELTED INTO A MASS

Experience with molybdenite deposits seems to show that they are invariably very spotted and irregular in their occurrence. Until the past year no molybdenite mine has been regularly worked in the United States largely because of this irregularity in occurrence. The United States Geological Survey has in its possession pieces of metallic molybdenum which have been swaged and worked into shape. Some of this material is now on exhibition at San Francisco in the Mining Building.

The General Electric Company has in its Research Laboratory one of the finest corps of scientific assistants in this or any other country. The chief of the laboratory, Dr. W. R. Whitney, is a man whose character and standing are such that whatever he says or whatever goes out from the laboratory under his approval can be accepted with the same confidence as that from any other scientific workers. When the statement is made that molybdenum cannot be melted into a mass it is, of course, meant that pure molybdenum should be the result. It is understood by the Survey that it is comparatively easy to make carbides of molybdenum, and that such carbides are formed when the material is melted down in an electric furnace, the carbon coming from the electrodes. The only other known way of melting molybdenum is by the thermit method in which aluminum is added to the molybdenum. The difficulty has always been to melt down the material and keep it pure. As the melted point of molybdenum is reported to be something over 2,500° C., the difficulty is at once apparent.

Molybdenum is not obtained directly from the sulphide as a powder under ordinary practice, where it is to be used as a malleable metal but is first changed to one of its salts, such as the ammonium molybdate, and from that to the metal very much as tungsten is reduced.

An interesting article on molybdenum by Winne and Dantszen, entitled, "Electric Laboratory Furnace with Resistor of Ductile Tungsten or Molybdenum," appears in *Metalurgical and Chemical Engineering*, volume 9, No. 10, October, 1911, pages 537 and 538.

POTASH ANNOUNCEMENT EXCITES WIDE INTEREST

Due to the recent publication of information from the office of the Secretary of the Interior in regard to the successful production of potash at Marysvale, Utah, a large number of letters are reaching the Geological Survey, asking for more details in connection with the production of potash in the United States.

POTASH CONTENT OF COPPER TAILINGS CALLED TO ATTENTION OF NATION'S CHEMISTS

Geological Survey Suggests That Certain Ores May Become Important Source of Much Needed Mineral—Locked Up in Silicates Difficult Problem Offered

Another line on which the potash problem may be attacked is suggested by the United States Geological Survey in a bulletin published the middle of last month on "Potash in Certain Copper and Gold Ores." Evidence already is reaching Washington that this suggestion was all that was necessary to set a large number of chemists to studying the question.

B. S. Butler, who is the Survey's specialist on copper comments as follows on the problem in the introduction of the report:

"The amount of copper ore that is treated by concentrating methods has rapidly increased during the last few years and now exceed 30,000,000 tons a year. Probably 25,000,000 tons of western copper ores are now annually treated by this process. Any commercial use that might be made of the tailings from such treatment would be of prime importance. In the past the Survey, in its study of these deposits, has collected a large amount of information concerning the composition of the ores, much of which has recently been published for the first time. An inspection of these analyses shows the fact well known to students of the deposits, that the ores are relatively rich in potassium.

"In the treatment of the ores for the recovery of the metals contained they are finely ground. If the recovery of potash from silicates should ever become a commercial possibility it would seem that the tailings from these ores are in a condition well suited to cheap treatment and would furnish a very large supply. They are, moreover, accessible to transportation facilities and in many places to moderately cheap supplies of electric power, water, etc., that have been provided for recovering the metal content of the ores. The recovery of potassium from silicates has received much attention in recent years, but no commercially successful method has yet been put into operation. The large and cheap supply of such material however, is certain to encourage further investigation. It seems reasonable to suppose that in the treatment of ores in which the potassium occurs in the mineral muscovite, the muscovite will tend to collect in the finer material or 'slimes,' and these finer tailings may be considerably higher in potassium than the coarser material. If they are, it may be to the interest of the companies to impound separately the fine and coarse tailings."

It is well known to chemists that after strong ignition, or after having been melted, the alkalis and a part of the alumina con-

tained in mica are soluble in sulphuric or muriatic acid, even if a rather weak acid is used.

Analyses of copper ores and tailings showing the amount of potash contained have been compiled and are contained in the bulletin. The samples analyzed are from the following copper districts: Bingham district, Utah; San Francisco district, Utah; Santa Rita district, N. Mex.; Ray district, Ariz.; Miami district, Ariz.; Morenci district, Ariz.; Ely, Nev.; Butte district, Mont.

Samples of gold ore, showing considerable percentages of potash, were taken from the following camps: Cripple Creek district, Colo.; Goldfield district, Nev.; Tonopah district, Nev.

Another possible source of potash is muscovite. The bulletin contains a note on this mineral by George Steiger.

VARIOUS FIRMS IN MARKET FOR MOLYBDENITE ORES

The Primos Chemical Co. is mining molybdenite on a rather large scale near Empire, Colo., and two other firms are said to be mining on a smaller scale in the same State. The use of molybdenite in steel has been given up by some firms, while taken up again by others. As at present known, the principal consumers of molybdenite in the United States are the Primos Chemical Co., Primos, Pa.; York Metal & Alloys Co., York, Pa., and the Goldschmidt Thermit Co., 90 West Street, New York City. The firms named use molybdenite to make molybdenum metal or ferro-molybdenum. The General Electric Co. may also be in the market for molybdenum ore, as it uses a considerable quantity of molybdenum metal. Molybdenite is used in chemicals by the J. P. Adamson Chemical Co., Phillipsburg, N. J., and the Baker & Adamson Chemical Co., Pennsylvania, and Henry E. Wood & Co., 1734 Arapahoe Street, Denver, Colo., are always in the market for molybdenite ores.

Ely Report to be Issued Next Year

The report on the Ely, Nev., mining district is still in the hands of the editor of the U. S. Geological Survey and probably will not be ready for distribution until next summer.

GOVERNMENT GEOLOGISTS MAY NOT ACCEPT PRIVATE WORK

The organic act establishing the U. S. Geological Survey contains the following provision:

"And that the Director and members of the Geological Survey shall have no personal or private interests in the lands or mineral wealth of the region under survey, and shall execute no surveys or examinations for private parties or corporations; . . ."

In accordance with this action by Congress, geologists of the Survey are not permitted to make geological or mining examinations in the United States or Alaska for private persons or corporations. Before entering upon such private employment in this country, the geologist must first submit his resignation.

On the other hand, geologists are permitted, on application, to do such private work in foreign countries for short periods provided the work in their care is in such condition that it may be suspended for a time without sacrifice of the public interests, and provided leave of absence without pay is taken for the entire period of employment for such foreign investigations. If the period of such service is of any considerable length, the geologist will tender his resignation before accepting private service; on the other hand, if the foreign service is entered at the request of the Government of some foreign country, State, or educational institution, the geologist is given leave of absence without pay.

It is considered an advantage to a geologist to have an opportunity to study geology in foreign countries, and if the investigations are systematic or detailed, the professional services of the geologist are so increased in value, as a result of the experience, as to be of benefit to the Survey as well as to the man. In harmony with this view, the geologist may, even when he has been engaged in foreign work for private parties, be reinstated in this Survey provided his services are needed, funds are available for his compensation, and his return to the service is accomplished within one year from the date of his resignation.

The practice above outlined is successful in giving an opportunity for foreign service to geologists who wish to broaden their experience, and in the case of private employment, to increase, incidentally, their income, though it has happened in some cases that geologists, on returning, have found their places filled and no funds available for their re-employment in the Survey. The rule regarding private work in this country is essential to the maintenance of the esprit of the scientific staff and the protection of the organization from most of the evils consequent upon mixing private service and private obligations with public service.

MISS BASCOM COMPLETING WORK ON PIEDMONT REGION

Office work on eight additional quadrangles in the Piedmont Plateau region of Pennsylvania will be completed by the end of the year. Some time will elapse, however, before publication will be made of this information.

No great amount of mining is in progress in this region. Some graphite is being mined. The development of this industry is hampered, however, by the difficulty of separating the graphite from the mica which it carries. As a result many failures have occurred. Progress is being made in treatment processes and it is probable that a cheap method of separation may be developed which will make possible the development of the extensive deposits of graphite in this region.

There is some iron ore in this portion of Pennsylvania, but it is not of sufficient richness to permit of mining under present conditions. Some extraction of ore has taken place in the past, however.

In the Chester and West Chester quadrangles feldspar and kaolin are mined in considerable quantities. The amount of feldspar mined, however, is decreasing, owing to the exhausting of deposits and the inferior grade of the product as well as the high cost of quarrying.

Painstaking work has been done in this general area by Miss Florence Bascome, a geologist in the service of the U. S. Geological Survey.

CANARY BIRD NOT SAFE TEST FOR LOW OXYGEN ATMOSPHERE

The resistiveness of a canary bird to oxygen deficiency has been demonstrated during two explorations of a mine fire area by the Bureau of Mines, Pittsburgh station, apparatus crew. Duplicate air samples that were collected during the first exploration at a point 1,000 feet from the fresh air base showed on analysis only 6 and 7 per cent oxygen, respectively, yet the canary bird was apparently not affected. The safety lamps were extinguished, however, before the apparatus crew advanced to the point where these samples were collected.

On the second exploration to a point 2,000 feet from the fresh air base one air sample showed only 2 per cent oxygen, and the canary was of course overcome long before this point was reached. However, the bird was carried back at once to the point where the analysis had shown 7 per cent of oxygen, and when the apparatus party returned in twenty minutes, they were surprised to find that the canary had revived in that atmosphere. All analyses were made with an Orsat apparatus inside the mine at the fresh air base. The atmosphere contained practically no carbon monoxide.

LEADING LIGHTS IN THE SCIENCE OF MINING TO DISCUSS INDUSTRY'S PROBLEMS

Pan-American Scientific Conference, Which Will Meet in Washington this Month, Will Call Together Many Noted Men Representing Every Country in the Western Hemisphere

This month is to witness the most important gathering of American scientists that ever has taken place. The Pan-American Scientific Conference will meet in Washington December 27 and will be in session for two weeks. Every country in this hemisphere will send some of its most distinguished scientists to this meeting.

The conference will cover a variety of scientific subjects, of which the sciences related to mining will form an important part. Hennen Jennings, of Washington, former vice-president of the American Mining Congress, is in charge of the section covering mining, metallurgy, economic geology and applied chemistry.

While some very important mining papers cannot be announced at this time, as those who have been invited to deliver them have not as yet signified finally that they will accept the invitation, the following list of papers gives an idea of the importance of the conference:

Hennen Jennings, 2221 Massachusetts Ave., Washington, D. C., opening address for mining section.

Van H. Manning, Director, Bureau of Mines, Washington, D. C. The United States Bureau of Mines.

J. W. Thompson, Bureau of Mines, Washington, D. C. The Valuation of Mining Properties.

J. R. Finley, New York City. The Valuation of Mining Properties.

Pope Yeatman, 165 Broadway, New York City, N. Y. The Chile Exploration Company's Property in Chile.

James E. Little, Spanish-American Iron Ore Co., Felton, Cuba. The Iron Ore Industry of Cuba.

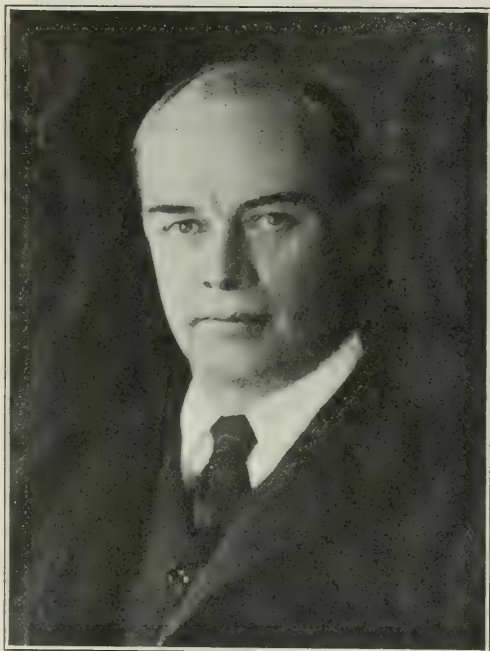
E. W. Parker, Williamsport, Pa. Uniformity in the Collection of Statistics of Mineral Production.

Howland Bancroft, Denver, Colo. Bolivian Tin Ores.

Walter Rittman, Bureau of Mines, 40th and Butler Streets, Pittsburgh, Pa. The Manufacture of Gasoline and Benzene-Toluene from Petroleum and other Hydrocarbons.

George S. Rice, Exp. Station, Bureau of Mines, Washington, D. C. Mining Cost and Selling Prices of Coal in the United States and Europe.

Carl Scholz, President, American Mining Congress, Munsey Building, Washington, D.



HENNEN JENNINGS

Chairman of Section VII of the Pan-American Scientific Conference.

C. The American Mining Congress and its Work.

Walter Harvey Weed, 29 Broadway, New York City, N. Y. The Copper Mining Industry in the Americas.

Charles Janin, 722 Kohl Bldg., San Francisco, Cal. Placer Mining Methods and Costs.

Enrique Cuevas, Chilean Embassy. The Nitrates of Chile.

Hennen Jennings, 2221 Massachusetts Ave., Washington, D. C., and Charles Janin, 722 Kohl Building, San Francisco, Cal. The Development of Gold Dredging in Montana. (Motion picture reels and photos.)

W. L. Saunders, 11 Broadway, New York City, N. Y. Costs of Drilling Rock and Breaking Ground, Geographically Considered.

J. W. Mercer, 15 Broad Street, New York, N. Y. Mining in Ecuador.

R. W. Raymond, 29 West 39th Street, New York City, N. Y. The Value of Technical Societies of the Mining Industry.

G. A. Roush, Asst. Prof. of Metallurgy, Lehigh University, South Bethlehem, Pa. Mineral Production of Latin America.

L. Vogelstein, 42 Broadway, New York City, N. Y. Buying and Selling of South American Non-Ferrous Metals.

Edwin S. Berry, 120 Broadway, New York City, N. Y. Mining at Braden (Chile).

A. H. Fay, Bureau of Mines, Washington, D. C. Mine Accidents and their Prevention.

METALLURGY

R. H. Richards, 491 Boylston Street, Boston, Mass. Ore Dressing.

C. L. Parsons, Chief, Division Mineral Technology, Bureau of Mines, Washington, D. C. The Occurrence and Preparation of Radium and Associated Metals.

R. W. Woolley, Director U. S. Mint, Washington, D. C. Assay Methods Used by the United States Mint.

Joseph W. Richards, Sec'y American Electrochemical Society, South Bethlehem, Pa. The Electric Smelting of Ores.

James E. Little, Mechanical Engineer, Felton, Cuba. The Iron Mines of Cuba and the Methods of Preparing their Ore.

W. R. Ingalls, 10th Ave. and 36th Street, New York City, N. Y. The Possibility of Zinc Smelting on the Atlantic Seaboard of the United States.

G. H. Clevenger, 381 Hawthorne Ave., Palo Alto, Cal. The Possibility of Treating by the Cyanide Process the Complex Silver or Silver-Gold Ores of the Latin American Republics.

E. R. Mathewson, Anaconda, Mont. (Suggested by D. H. Brown, 43 Esch Place, New York, N. Y.) Use of Pulverized Fuel in Metallurgy.

ECONOMIC GEOLOGY

David White, Chief Geologist U. S. Geological Survey, Washington, D. C. Organization and Cost of Government Surveys.

E. C. Eckel, Munsey Building, Washington, D. C. Cement Production in the United States.

Waldemar Lindgren, Massachusetts Institute of Technology, Boston, Mass. Gold and Silver Deposits in North and South America.

David T. Day, 2511 Cliffbourne Place, Washington, D. C. Petroleum in Mexico.

I. C. White, State Geologist, Morgantown, W. Va. The Coals of Brazil.

E. W. Shaw, U. S. Geological Survey, Washington, D. C. Petroleum and Asphalts in the United States.

George Otis Smith, Director U. S. Geological Survey, Washington, D. C. The Public's Interest in Mineral Resources.

C. E. Siebenthal, U. S. Geological Survey, Washington, D. C. Lead and Zinc in the United States.

J. C. Branner, president, Leland-Stanford Junior University, Stanford University, Cal. Recent Contributions to the Geology of Brazil, and Their Relations to the Development of That Country.

C. K. Keith, University of Wisconsin, Madison, Wis. Iron Ore Deposits of the Americas.

M. R. Campbell, U. S. Geological Survey, Washington, D. C. The Coals of the United States.

CONSERVATION

Ralph Arnold, Union Oil Building, Los Angeles, Cal. Conservation of the Oil and Gas Resources of the Americas.

W. C. Mendenhall, U. S. Geological Survey, Washington, D. C. The Federal Government and the Nation's Mineral Resources.

Richard T. Ely, University of Wisconsin, Madison, Wis. Conservation and Economic Theory.

J. S. Burrows, Citizens' Bank Building, Norfolk, Va. Practical Difficulties in Conserving our Coal Supply.

Roswell H. Johnson, University of Pittsburgh, Pittsburgh, Pa. Prevention of Waste in the Oil Fields of the Eastern United States.

W. C. Phalen, U. S. Geological Survey, Washington, D. C. Conservation of Phosphate Rock.

T. N. Carver, Harvard University, Cambridge, Mass. The Conservation of Human Energy.

R. H. Hess, University of Wisconsin, Madison, Wis. The Stages in Economic Evolution and Conservation.

Floyd W. Parson, Editor *Coal Age*, Tenth Avenue and 36th Street, New York City. The Federal Government and the Nation's Mineral Resources.

J. W. Paul, U. S. Bureau of Mines, Pittsburgh, Pa. Mine Rescue Work.

Frank Haas, Fairmont Coal Co., Fairmont, W. Va. Saving of Coal Through the Employment of Better Methods of Mining.

J. F. Dunlop, U. S. Geological Survey, Washington, D. C. Conservation of Metals by the Recovery of Scrap or Used Metals.

W. H. Emmons, University of Minnesota, Minneapolis, Minn. Conservation of Copper.

J. F. Callbreath, Sec'y American Mining Congress, Munsey Building, Washington, D. C. Government Control of Minerals on Public Lands.

Dr. C. K. Keith, University of Wisconsin, Madison, Wis. Conservation of Iron Ores.

Section VII comprises the following subjects: Mining and metallurgy, economic geology, and applied chemistry. It will consider, especially the mineral resources of the several republics, the methods by which these resources can be developed and used, and the manifold applications of chemistry in the production and utilization of materials of benefit to man.

The chairman of this section is Hennen Jennings, a former president of the London Institute of Mining and Metallurgy and member of the Institute of Civil Engineers (Lon-

don), the American Institute of Mining Engineers, the South African Association of Engineers, and other national and international societies of scientific and mining interests. Mr. S. Sanford, mining engineer and editor, the United States Bureau of Mines, Washington, D. C., is the secretary of this section.

The following persons constitute the committees of the four sub-sections in Section VII:

MINING

Van H. Manning, director, United States Bureau of Mines, Washington, D. C., chairman.

J. F. Callbreath, secretary, American Mining Congress, Washington, D. C.

C. H. Lindley, attorney, authority on mining law, San Francisco, Cal.

E. W. Parker, Division of Mineral Resources, Bureau of Mines, Washington, D. C.

H. C. Perkins, mining engineer, 1701 Connecticut Avenue, Washington, D. C.

G. S. Rice, chief mining engineer, United States Bureau of Mines, Pittsburgh, Pa.

W. L. Saunders, president, American Institute of Mining Engineers, New York, N. Y.

B. B. Thayer, mining engineer, 42 Broadway, New York, N. Y.

METALLURGY

W. R. Ingalls, president, Mining and Metallurgical Society of America, and editor of the *Engineering and Mining Journal*, New York, N. Y., chairman.

F. G. Cottrell, chief chemist, United States Bureau of Mines, San Francisco, Cal.

R. H. Richards, professor emeritus of mining and metallurgy, Massachusetts Institute of Technology, Boston, Mass.

Bradley Stoughton, secretary, American Institute of Mining Engineers, New York, N. Y.

L. D. Ricketts, mining and metallurgical engineer, New York, N. Y.

Karl Eilers, metallurgical engineer, New York, N. Y.

W. R. Walker, metallurgical engineer, New York, N. Y.

C. H. Clevenger, professor of metallurgy, Leland Stanford Junior University, Stanford University, California.

ECONOMIC GEOLOGY

George Otis Smith, director, United States Geological Survey, Washington, D. C., chairman.

J. C. Branner, president, Leland Stanford Junior University, Stanford University, California.

J. F. Kemp, professor of geology, Columbia University, New York, N. Y.

Waldemar Lindgren, professor of economic geology, Massachusetts Institute of Technology, Boston, Mass.

Charles R. Van Hise, president, University of Wisconsin, Madison, Wis.

David White, chief geologist, United States Geological Survey, Washington, D. C.

I. C. White, State geologist, Morgantown, W. Va.

Bailey White, consulting geologist to Argentine Government, professor of geology, Leland Stanford Junior University, Stanford University, California.

APPLIED CHEMISTRY.

Charles E. Munroe, authority on explosives; dean, graduate studies, George Washington University, Washington, D. C., chairman.

Carl L. Alsberg, chief, Bureau of Chemistry, Department of Agriculture, Washington, D. C.

C. H. Herty, president, American Chemical Society, Chapel Hill, N. C.

B. C. Hesse, consulting engineer, 90 William Street, New York, N. Y.

W. F. Hillebrand, chief chemist, United States Bureau of Standards, Washington, D. C.

Lawrence Addicks, president, American Electrochemical Society, Douglas, Ariz.

P. C. McIlhiney, chemist, chairman of New York section, Society of Chemical Industry, New York, N. Y.

Harvey W. Wiley, contributing editor, *Good Housekeeping Magazine*, Washington, D. C.

SPECIAL CONFERENCES

Topics for special Pan-American conferences in each of the four sub-sections of the mining section are:

The mining law of each country and the changes that may be made to aid the development of mineral resources. History of the mining industry in each country with reference to the beginnings of that industry. The development of the Patio process. Bibliography of mining.

Present methods of concentrating ores and the development of concentration methods. International relations in the exchange of ores and metals. Bibliography of metallurgy.

Development of hydroelectric power for mining and metallurgy, the amount probably available, and specific benefits from its utilization.

The relation of geological work to the development of the country. A bibliography of economic geology.

Natural and artificial nitrates; the present status and the outlook for these industries.

Manufacture of Ferros

The Geological Survey has published no literature covering the manufacture of various ferros. Ferro-titanium has been manufactured by one company by smelting in an electric furnace, rutile, coke, and iron beneath a bath of aluminum. The Goldschmidt Thermit Co., 90 West Street, New York City, has manufactured all of the ferros mentioned and others by mixing the various ores with iron and smelting with thermit. Ferro-taungsten, ferro-vanadium, and ferro-molybdenum are also made in the electric furnace.

WITHDRAWALS AND RESTORATIONS OF PUBLIC LANDS

Summary of principal withdrawals and restorations during the period March 4, 1913, to October 31, 1915 (in acres):

	<i>Outstanding withdrawn March 4, 1913</i>	<i>Withdrawn during period.</i>	<i>Restored during period.</i>	<i>Outstanding withdrawn Oct. 31, 1915</i>
Coal	65,410,464	436,726	17,402,697	48,444,493
Oil and gas	4,817,706	550,580	538,619	4,829,667
Phosphate	3,367,378	443,972	1,151,214	2,660,136
Potash	133,829	211,384	3,200	342,013
Power site	1,857,258	542,450	165,066	2,234,642
Public water	86,216	98,431	2,702	181,945
Totals	75,672,851	2,283,543	19,263,498	58,692,896

CONDITIONS UNDER WHICH SURVEY MAKES EXAMINATIONS

When studies of geologic structure, with reference to the possible occurrence of oil or gas, are made by the U. S. Geological Survey in cooperation with State surveys or other governmental organizations, including municipal governments, which contribute to the cost of the investigation, the areas to be examined are agreed upon in conference, or, in some cases, are accepted by the Survey on recommendation of the cooperating organization.

In view of the greater amount of work to be accomplished through the cooperative funds, added to the Survey appropriation, precedence in the formulation of plans covering geological field work is generally given to cooperative projects.

Examinations made at the request of other Federal bureaus also are given precedence in the distribution of the Survey funds available for oil and gas investigations.

Finally, the remaining funds that may be allotted to oil and gas structure studies are devoted to the examinations of regions where, after the consideration of the conditions in all parts of the country, it appears that the greatest public benefit is to be derived from the work, or where there is most widespread public interest in the possible occurrence of oil and gas in commercial quantities.

The Survey is prohibited by law from making examinations in the interests of private parties or corporations and does not lend the assistance of its geologists for such service.

Antimony Report to be Out Soon

The manuscript of the Geological Survey antimony report has been finished. This is the most complete report on this metal ever attempted by the Survey. In addition, the report discusses arsenic, bismuth, selenium and tellurium. It will be ready for distribution in about two months.

FORMATION OF COAL AND PEAT IS DESCRIBED CONCISELY

Charles A. Davis, fuel technologist at the Bureau of Mines, is the author of the following concise paragraph describing the manner in which peat, lignite, coal and graphite are formed:

"Peat is incipient coal. It is made up of the more or less thoroughly decomposed and carbonized remains of plants accumulated under conditions that have prevented their complete transformation into gaseous and mineral matter. In the course of their growth plants segregate carbon dioxide from the gases of the atmosphere and, by the aid of sunlight, decompose it and water in their green tissues and recombine the elements into complicated organic compounds, in which carbon is the characterizing element. If the compounds formed in this way by practically all green plants decay in the air, they are slowly changed back to gases again, chiefly by the activities of plants and animals of low orders, the biochemical agents of decomposition. If, however, the air is excluded from accumulations of plant material, chemical and physical changes of quite a different character take place—and much more slowly than when air is present—by which the vegetable matter loses only a part of its constituents. In the course of such changes and losses two gases—hydrogen and oxygen, the chemical elements that form water—disappear more quickly than carbon, the third important chemical element, which in combination with them forms cellulose and lignin, the compounds of which most plant tissues and organs are composed. The carbon is concentrated as such changes continue, and the original plant material becomes more and more nearly pure carbon. Peat, lignite, coal, anthracite and graphite, a form of carbon, are successive stages in this process of carbonization as it is represented in nature. Similar changes are made in wood or other plant structures when they are heated in closed vessels, the residue left after heating being charcoal, also a form of nearly pure carbon."

OFFICIALS HERE ALARMED OVER PROSPECTS OF BIG COAL STRIKE

President Already Is Considering Means of Averting Threatening Trouble, It Is Believed—Exceptional Opportunity Presented to Labor Unions with Country-wide Coal Famine More Than a Possibility

Washington hears that serious trouble is brewing in the coal fields. In April, for the first time in six years, the working agreement between both the anthracite and bituminous operators and the miners will expire simultaneously. It is the belief here that unless some method be found for settling disputes now assuming definite and threatening form, a coal strike will develop next April.

At the present time, it is pointed out, the labor unions are in excellent condition, both financially and numerically. Their general and local treasuries are full to overflowing, their ranks are filled up, and there is no danger of complications arising through the competition of non-union foreign labor. The drain on the labor supply occasioned by the war in Europe, and the closing of the source of this supply by the same cause, have made the percentage of union members in the coal fields unprecedentedly high.

Union labor is cognizant of its present advantage and labor leaders declare that the situation is so favorable that should there be a strike, the miners would enjoy a peculiarly advantageous position throughout. This might mean a continuance of the disagreement and strike through the spring, summer and autumn of 1916, and the coming of winter with a coal famine throughout the land.

The attitude of the United Mine Workers of America over a number of years makes it possible to forecast the demands of the miners and the methods adopted to force their acceptance. The tri-district convention of the United Mine Workers recently held in Wilkes-Barre, Pa., hinted that the demands of the anthracite workers would be recognition of the union, an eight-hour day, a 20 per cent increase in wages, and a "more speedy, simplified, and satisfactory method of settling disputes," this latter probably meaning a union tribunal empowered to make settlements. Of greatest significance, however, it is explained here, is the expected demand for a two-year, instead of a four-year agreement.

The Department of Labor has studied the question in detail and has made tentative recommendation to the President. This report may have had a bearing on the announcement made after a Cabinet meeting of last month, that mining legislation would be pressed by the administration. At any rate, whatever is to be done must be accomplished speedily, for the miners recognize their present opportunity and are disposed to press the advantage.

There is no thought of an attempt to settle coal field differences the way the anthracite strike of some years ago was settled by President Roosevelt—by an extra constitutional means. Even though President Wilson were disposed to try that plan it is quite evident that he could not execute it. Opponents of that kind of settlement are wiser now than they were when Col. Roosevelt suddenly thrust his solution upon them and compelled its acceptance before they had time to think.

The Wilson administration, however, probably will place its first reliance in the good offices of the Department of Labor, and will count upon the sympathetic understanding of labor conditions credited to the chiefs of this department to accomplish an amicable settlement. It is the belief of some men here, who oppose the attitude which labor assumes in the coal fields, that the spirit of European syndicalism is strong among members of United Mine Workers of America. These men allege that if the demand for a two-year, instead of a four-year agreement is granted, it will serve to strengthen the syndicalistic program of periodic strikes. The desired end of this element in the miners' union, it is explained, is to control eventually the mines and operate upon a cooperative basis. To do this, it is pointed out, the mine owners must be placed in a position where the operation of the mines is no longer profitable. A series of strikes pressing excessive demands, it is alleged, would be the method used to bring this condition about. This program, say the students of labor problems, is an integral part of the syndicalistic propaganda and, in fact, is the basis of its philosophy.

It is folly to assume that a strike of such proportions as now threatens would be unaccompanied by violence. This is one of the phases of the situation which now gives greatest concern to Federal authorities.

To Visit Colorado Mines

J. J. Rutledge, of the Bureau of Mines staff, has visited a number of Colorado and Wyoming mines with the idea of observing improved methods of mining and to make arrangements for a visit of Oklahoma coal operators and engineers who wish to make a trip through the Colorado and Wyoming fields.

WIDESPREAD INTEREST IN MOLYBDENUM SHOWN

Judging from the large number of letters reaching the United States Geological Survey there is very widespread interest among mining men in molybdenum. Here are some samples of the more important questions asked and the replies that are made:

What has been the average price of molybdenite in recent years?

No average price for molybdenite can be given. The production has been small and irregular and the demand has been similar, so that molybdenite has been bought by individual bargaining. In general prices ranged from 15 to 30 cents per pound for molybdenite carrying 92 per cent MoS_2 until the last year or so.

About what is its present price?

During the last year or so molybdenite has risen in price to \$1 or even \$1.50 per pound for material carrying 92 per cent MoS_2 . Such prices, however, cannot be depended upon.

Is the price of molybdenite likely to remain stable after the war is over?

No prediction can be made as to whether the price of molybdenite will be stable after the war. So far as is known to the Survey, no developments in the use of molybdenum have taken place which promise a large and continued use of a metal.

Has any new development in the arts tended to increase its value?

The Survey has made inquiry for new uses of molybdenite which tend to increase its price. It is probable that its use in electrical apparatus will steady the demand but whether it will be sufficient to increase the price or hold the price to its present level the Survey cannot state.

What is the amount of annual consumption in the United States?

The annual consumption of molybdenite in the United States is unknown to the Survey. Small quantities are imported from foreign countries in the form of molybdenite, possibly some wulfenite, some molybdenum metal, and some ferro-molybdenum. These quantities are all comparatively small and the Survey has not been able to get definite figures showing the quantities. The production in the United States itself has never amounted to more than a few tons per year. From where do the principal supplies of molybdenite come?

The greatest quantities of molybdenite are mined in New South Wales, Queensland and Norway. During the past year the Primos Chemical Co. has undertaken the operation of a molybdenite mine near Empire, Colo., on a considerable scale, and it is understood that two or three properties in Colorado are being worked on a smaller scale.

Please give the name of some firm that is a user of this mineral in quantity?

The following firms are users and buyers of molybdenite:

J. T. Baker Chemical Co., Phillipsburg, New Jersey.

Baker & Adamson Chemical Co., Easton, Pennsylvania.

Goldschmidt Thermit Co., 90 West Street, New York City.

Primos Chemical Co., Primos, Pa.

S. Schaaf-Regelman, 21 State Street, New York City.

Wood, Henry E. & Co., 1734 Arapahoe Street, Denver, Colo.

York Metal & Alloys Co., York, Pa.

EVAPORATION OF POTASH FROM BRINES DISCUSSED

According to the results set forth in a paper by W. B. Hicks, of the Geological Survey, the potassium is concentrated best in brines containing carbonates and chlorides, and poorest in those containing sulphates and carbonates, though a small amount of sulphate does not seem to hinder the concentration materially. In brines that contain several acid radicles the concentration of potassium may increase to a maximum as evaporation proceeds and then decline. The evidence at hand indicates that a large percentage of the potassium in a solution is lost during evaporation before the maximum concentration of potassium is attained. The loss is small until the potassium reaches a concentration of about 4 per cent, but it is very rapid during further evaporation. Therefore in the commercial extraction of potash from brines, especially those of the alkalies, it would seem best first to concentrate the solution by evaporation until it contained about 4 per cent of potassium, and then to subject the resulting bittern to other processes of manufacture. The most advantageous point of concentration would, however, have to be determined for each particular brine.

MANY TESTS MADE TO FIND BEST PAPER FOR SURVEY MAPS

Some complaint has been made as to the quality of paper used in the maps published by the U. S. Geological Survey.

The objection is that these maps will not stand frequent folding. The paper will stand only a limited amount of wear when carried in the pocket. It is suggested that a stronger grade of bond paper be used for these maps.

The Survey has long recognized the desirability of having a more durable paper, but it is impossible to bring out the small lines on these maps on the stronger grades of paper, and it is absolutely necessary to use smooth paper in order to take the fine lines which are so essential to these maps.

Experiments have been made with a large number of papers and the grade now used in the maps has proved the best.

Many engineers and geologists who have to carry these maps in their pockets while on field work, paste the maps on cloth in order to prevent wearing at the folds.

COPPER EXPECTED TO STAY AT PRESENT PRICE LEVEL AFTER THE WAR

Experts Here See No Reason Why Red Metal Should Slump with Close of Hostilities—Germans Now Control Servian Mines—Brass Shells Use Most Copper

It is the opinion of experts here that copper prices will not fall much below the present level after the war. While the war has developed that it uses more copper than do the works of peace, it is believed that re-stocking will be carried forward during the next few years to sufficient extent to maintain practically the same demand for copper as exists at present.

No copper mining has been interfered with by the war. In fact the production of copper undoubtedly has been stimulated throughout the world. This has been the case especially in the mines of Germany and Austria. While these mines under normal conditions have not been large producers, it is believed that their production has been greatly increased since the time that Germany and Austria were cut off from foreign supplies. This does not mean that they will be able to continue operation when American copper can move unrestrictedly into Germany.

One of the developments of the recent campaign of the Teutonic powers into Servia is that they now control the copper producing territory of that kingdom. It is understood however that the Servians flooded the mines before abandoning them. There is little copper in Turkey and if the Germans should be successful in keeping open the road to Constantinople it would have no particular bearing on the copper situation, it is said here.

While the uses of copper in war are multitudinous, by far the greater part of the consumption goes into brass shells.

A considerable proportion of the German production of copper previous to the war, was used in the manufacture of articles for export. This trade has not stopped and the copper necessary for this manufacturing formerly done in Germany, now is being consumed by English and American manufacturers.

Topographers Return

A number of the topographical engineers who have been doing field work throughout the summer for the Geological Survey, have returned to Washington. Many of these men have been doing very important service in mining regions, both in the coal mining areas and in the metal mining districts. They will be in the office all winter to ink up the sheets on which they have been working.

COMING OF PEACE WILL STOP ANTIMONY AND TUNGSTEN MINING

It is practically certain that tungsten will fall to a point where it will be impossible to mine it with profit in this country, when the demand from Europe falls off, as is certain to happen with the close of the war. It is believed, however, that this slump in price will be temporary. As conditions stabilize there will be a market for American tungsten at prices that will admit of a reasonable profit, it is believed.

Following the war antimony will go to about the same price level as existed previously, it is believed. This means that it cannot be mined with profit in this country, unless larger and richer deposits are discovered than have been developed thus far.

Tin prices have not been affected greatly by the war. It is true that tin is now a few cents higher than it was previous to the opening of hostilities, but it is as likely that this is due to manipulation, as it is to any increased demand that has been occasioned by the new conditions brought about by the war.

While determined efforts have been made to find the source of the demand for molybdenum, results have been unsatisfactory. It has been established that Germany was a very large purchaser of molybdenum for more than a year previous to the outbreak of the war. It is known that some molybdenum is being used in tool steel and some in the determining of the amount of phosphorus in iron and steel. To just what extent the metal is being used in this country or abroad is not known. For this reason it is impossible for experts to forecast what effect the coming of peace will have on the price of this metal.

SCHOLZ AND DAY PUT ON LABOR EXCHANGE COMMITTEE

Carl Scholz, president of the American Mining Congress and of the Rock Island Coal Co., of Chicago, and Harry L. Day, first vice-president of the American Mining Congress and president of the Federal Mining Co., of Wallace, Idaho, have been named by the Chamber of Commerce of the United States as members of its committee on labor exchanges.

LOCATIONS OF TUNGSTEN MINES IN U. S. ARE LISTED

The principal tungsten fields of the United States are those of Boulder County, Colorado, and Atolia, California. The former produces the iron tungstate, ferberite, and the latter the calcium tungstate, scheelite.

In Arizona small quantities of tungsten ore are mined at the following places: Dagoon (the manganese tungstate, hübnerite); Arivaca (the iron manganese tungstate, wolframite); Cave Creek (ferberite), and smaller lots at other points. In Washington hübnerite is mined at Deer Park; wolframite at Cathedral Peak, near Loomis, and at Cedar Canyon. In Idaho small quantities of scheelite are mined at Murray, and hübnerite is mined at Patterson, Custer County. In Nevada, hübnerite and scheelite are mined at several places near Osceola, hübnerite at Round Mountain, and scheelite at Browns. In California, a little scheelite has been mined at Grass Valley, large quantities at Atolia, and a little at Randsburg, four miles from Atolia; wolframite with a little scheelite, has been mined in the New York Mountains in the eastern end of San Bernardino County. In Utah a little scheelite is found in the Deep Creek Mountains at the western side of the State. In South Dakota small quantities of wolframite are mined at Hill City and Lead. Although the Boulder County field in Colorado is a large producer of tungsten ores it is the only place in the State in which tungsten ores are found in commercially valuable quantity.

In 1914 the production of tungsten ores in the United States amounted to an equivalent of 990 tons of concentrates carrying 60 per cent tungsten trioxide (WO_3), and was valued at about \$435,000. Of this quantity 467 tons were produced from the Boulder County field, Colorado. A somewhat larger quantity was produced in the Atolia, California, field. This production, however, was below that of previous years and will be much exceeded in 1915.

The production for the past ten years, estimated in an equivalent of concentrates carrying 60 per cent of tungsten trioxide (WO_3), has been as follows:

	Tons.
1905.....	803
1906.....	928
1907.....	1,640
1908.....	671
1909.....	1,619
1910.....	1,821
1911.....	1,139
1912.....	1,330
1913.....	1,537
1914.....	990

Bulletin 583, of the United States Geological Survey upon "Ferberite of Colorado and Other Wolframites," and several extracts from Mineral Resources of the United States, deal with tungsten.

DEMAND FOR ANTIMONY CONTINUES TO INCREASE

The principal uses of antimony, the demand for which continues to increase, are in making bearing metals, white metals for the foundation of silver plated ware, and other plated ware, such as clock cases, table ware, coffin trimmings and toys. At present a great demand has been created by the use of antimony in making shrapnel bullets. The following persons are buyers of antimony ores:

Atkins, Kroll & Co., San Francisco, Cal.
Elsasser Merchants Finance Co., 625 Security Bldg., Los Angeles, Cal.
Frazer & Co., 50 Church Street, New York City.
C. W. Hill Chemical Co., 320 S. San Pedro Street, Los Angeles, Cal.
Edw. Hill's, Son & Co., Inc., 65 Wall Street, New York City.
Hoyt Metal Co., St. Louis, Mo.
M. D. Mackay, 130 Pearl Street, New York City.
Magnolia Metal Co., 113-15 Bank Street, New York City.
Pennsylvania Smelting Co., Pittsburgh, Pa.
Philipp Brothers, 42 Broadway, New York City.
Herbert Salinger, Beer-Sondheimer Co., Newhouse Bldg., Salt Lake City, Utah.
C. Solomon, Jr. (Chapman Smelting Co.), 409 Battery Street, San Francisco, Cal.
David Taylor, Consolidated Ores Co., Boston Bldg., Salt Lake City, Utah.
Wm. Wraith, Manager, International Smelting Co., Salt Lake City, Utah.

Two New Explosives Pass Tests

The Bureau of Mines has placed the explosive "du Pont Permissible No. 1" on its list of explosives permissible for use in coal mines. It belongs to Class 1a, ammonium nitrate, and is permissible only when used with detonators, preferably electric detonators, of not less efficiency than the No. 6. It is manufactured by the E. I. du Pont de Nemours Powder Co., Wilmington, Del.

The explosive "Red H No. 8" also has been placed on the list of explosives permissible for use in coal mines. It is manufactured by the Hercules Powder Co., Wilmington, Del.

The number of explosives now on the permissible list is 136.

Little Oil in Missouri

No reports have been published by the Geological Survey concerning oil in Missouri. Small amounts of oil have been discovered on the western border of the State. This occurrence of oil is chiefly in Bates, Jackson and Platte Counties. In no place has oil been discovered in commercial quantities.

MEXICAN ASPHALT CERTAIN TO DOMINATE IN EAST

The manufactured or oil asphalt produced in the United States is obtained from certain grades of crude petroleum found in California, Texas, Louisiana, Oklahoma, Kansas, and Illinois, as well as from the heavier grades of Mexican crude, which are imported in ever increasing quantities for the manufacture of asphalt and asphalt products, according to John D. Northrop, of the United States Geological Survey.

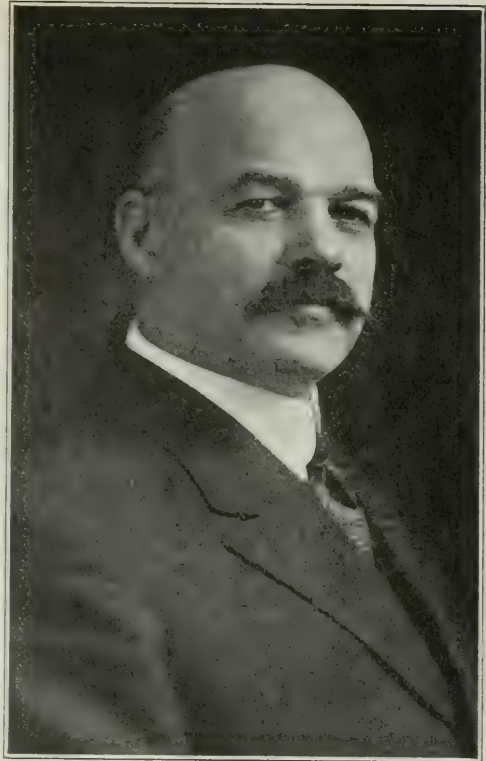
Since 1907 the output of manufactured asphalt from domestic sources has dominated the asphalt industry in the United States, though it had been recognized as a factor of growing importance for years before. In the year 1907 the output of manufactured asphalt exceeded for the first time the combined output of the natural varieties, and by a margin of 52,035 short tons. In 1908 and 1909 this margin was cut down to some extent.

Within the last two or three years oil asphalt from domestic sources has met a strong competitor for the American markets in a similar product manufactured in this country from heavy asphaltic oils imported from Mexico. Two new plants for the manufacture of asphalt from Mexican petroleum began operations in the United States in 1914, and the output was more than doubled as compared with 1913, reaching a total within 13 per cent of the output of oil asphalt from domestic sources. The higher asphalt content of the Mexican petroleum and the correspondingly lower cost of extraction has already converted certain refiners formerly utilizing petroleum of domestic origin to the exclusive use of the Mexican oil for asphalt manufacture.

That the Mexican product will dominate the market for oil asphalt in the eastern part of the United States in the future appears certain in consideration of the facts that the supply of crude material is abundant and that it can be delivered at Atlantic and Gulf ports at a less cost than suitable crude oils of domestic origin. The abundance of asphaltic oil in California, however, assures local dominance of the oil asphalt markets tributary to the Pacific coast for some time to come. The number of active plants producing oil asphalt in the United States in 1914 was forty-four, of which number thirty-six refined exclusively petroleum of domestic origin. In 1913 the active plants producing oil asphalt numbered thirty-six, of which number twenty-six refined American oil exclusively.

Thirty-one Idaho Maps

Thirty-one topographical maps of areas in Idaho have been published by the United States Geological Survey. No topographical map of the entire state has been published to date.



M. R. CAMPBELL
In charge of section of Western Fuels, U. S.
Geological Survey.

M. R. CAMPBELL WALKS ALONG 300 MILES OF D. & R. G. TRACK

After tramping over 300 miles of the ties of the Denver & Rio Grande Railroad, M. R. Campbell, of the U. S. Geological Survey, has returned to Washington with a large amount of valuable data which will be embodied in the Survey's Guide Book which will cover this railroad.

This line is regarded by many as the most scenic of all the western railroads. It is said to be traveled by more tourists than is any other line of railway in this hemisphere. During last summer the facilities of the road were entirely inadequate to handle the enormous amount of business thrust upon it. The war in Europe and the fair at San Francisco were two important causes of the heavy increase in tourist travel throughout the West.

The points of interest tributary to this road will be covered in detail from Denver to Salt Lake City. During the past summer Mr. Campbell was able to walk over the portion of the road between Denver and Grand Junction. The remaining portion of the road will be covered next summer.



TANAYCOMO PLANT OF THE EMPIRE DISTRICT ELECTRIC COMPANY
Which is one of the principal producers of power for use in the copper and zinc district.

WORKING ON NEW ENGLAND GEOLOGICAL PROBLEMS

Geological problems of unusual interest have been under study in New England during the past summer. F. J. Katz, of the Geological Survey, has returned to Washington after several months spent in the vicinity of Portland, Maine, and Portsmouth, N. H. He has been doing detail geological work and mapping the geological formations. This work is of particular interest because many of the difficult problems of New England geology await the solution of the geological problem in the areas in which Mr. Katz has been working.

SOUTH AMERICA MARKETING ORES IN UNITED STATES

During recent months an unusual number of requests have been received from South American countries for publications of the Bureau of Mines and the Geological Survey.

The requests indicate that mining in most of the South American countries has been stimulated greatly since the opening of the war, and that the United States as a market for mineral products is proving very popular.

Agents of the Department of Commerce advise that every effort is being made by United States consuls, as well as by the special representatives of the Department of Commerce, to make much of this business permanent.

ENCOURAGING PROGRESS BEING MADE IN STUDY OF ORE CONSERVATION

Bureau of Mines Conducting Extensive Work in Utah and in Other States—Dorsey A. Lyons, in Charge of the Research, Consults Eastern Metallurgists on Problems Involved

While it is too early to announce any definite results in the work which has been in progress for more than a year in Utah, where extensive investigations are being conducted by the Bureau of Mines in the matter of conserving waste in various ores, the work is developing useful information in encouraging quantities, according to Dorsey A. Lyons, the metallurgist in charge of the Salt Lake station, and who is supervising similar work which is being done in several other States. Mr. Lyons was in Washington early last month consulting with Director Manning.

Particular attention is being paid to the conservation of lead and zinc values in Utah ores, which are now going to waste. This work is being done in cooperation with the resources of Utah through the State University.

Low grade ore, which is too lean to treat, represents a considerable portion of the resources of Utah and other States. For example, in one mine in Utah there is more than 1,000,000 tons of such low grade ore blocked out.

WANT ALL MINERALS USED

The Bureau of Mines is trying to find some method by which it will be possible to make such a saving, as will permit of the mining of such ore. In addition experiments are in progress which will make possible the utilization of other minerals besides those for which the ore is mined.

This is illustrated by the following analysis of a complex ore:

Iron, 33 per cent; manganese, 12 per cent; silicon, 14 per cent; lime, 1.5 per cent; lead, 3 per cent; zinc, 5 per cent; copper, .2 per cent; silver, 3 oz.; gold, 30 cents.

This ore is treated for its lead content only, the iron, manganese, silicon, lime, zinc, copper, silver and gold are thrown away. To stop the waste of all these substances as well as that portion of the lead which is lost, is the reason for the research now being conducted at Salt Lake City and at other points, under the direction of the Bureau of Mines.

MAIN WORK AT SALT LAKE

As much of the work as possible is being concentrated at Salt Lake City, where milling machinery and ample laboratory facilities are available. Arrangements are being made for cooperation in this work with operators in Idaho. The work is now being conducted in Kansas and Missouri.

Before returning to Salt Lake City Mr. Lyons, who is in charge of the entire work, will see a number of metallurgists interested in this problem. He will visit a number of metallurgical plants, with the idea of familiarizing himself with the exact state of progress that they have reached in studying the problem. In this way it is hoped that all duplication of effort may be avoided.

GLAUCONITE CHIEF CAUSE OF LIMONITE FORMATION

In speaking of the origin of iron in north-eastern Texas, E. F. Burchard says:

"With regard to the extent that glauconite has contributed to the formation of the north-east Texas limonite, I can say but little more at present than I have stated on page 74 of Bulletin 620-E, viz., that it is my belief that glauconite has played a more important part in the formation of the iron carbonite and limonite than has pyrite. I think that the abundance of glauconite must have been considerably greater than that of pyrite originally. At present, of course, glauconite is still much in evidence, while the pyrite, if ever present in appreciable quantities, has now practically disappeared. The products of decomposition of pyrite probably reacted upon the glauconite, and in such instances together they contributed iron; but it is significant that no ferruginous deposits are found except in association with more or less glauconite.

"The bedded limonite of Cherokee County was also of much interest to me. The overburden of an area of several acres had been stripped off so that I was able to get several good photographs showing the furrowed surface of the cap of sandstone at the top of the limonite."

Jeffrey Opens New Office

The Jeffrey Manufacturing Co., of Columbus, Ohio, announces that it has recently opened a new branch office in the M. & M. Building, Milwaukee, Wis.

This office is in charge of A. Q. Dufour, whose long experience and training in the application of Jeffrey products will enable him to be of great assistance in solving elevating, conveying and transmission problems.

REDUCTION OF ANTIMONY OXIDE TO ANTIMONY

The reduction of antimony oxide to antimony is accomplished by the following process according to Schnabel (*Handbook of Metallurgy*, translated by Henry Louis, vol. 2, The Macmillan Company, London and New York, 1907, pages 572 and 573).

"The object of this is to reduce the oxide (either tetroxide or trioxide) to metallic antimony or regulus of antimony. If coal alone be used for this purpose, a large proportion of the antimony will be lost through volatilization as trioxide, and any antimony sulphide still remaining in the roasted ore will not be decomposed. Substances are therefore added to the charges, which, on account of their easy fusibility, form a protecting cover and prevent the volatilization of the antimony; these also assist in the formation of fusible slags, and separate the metal from any sulphide of antimony present. The substances which are most advantageous for this purpose are such as remove the impurities from the antimony and also serve as a refining medium. Potash, soda, glauher salt, and other alkaline substances are used.

"The reduction is carried out in reverberatory furnaces, in shaft furnaces, and occasionally in crucibles in pot furnaces.

"The reverberatory furnace process is simple and easily controlled, but is accompanied by considerable loss of antimony, and is therefore only used where ores are rich and raw fuel cheap. Antimony trioxide formed in the volatilizing roasting is reduced to regulus of antimony in pots.

"The shaft furnace method causes less loss of antimony than the former one, and is less expensive, but presents technical difficulties. It is necessary to form a protecting slag which shall be sufficiently thin and fusible to protect the separated antimony from volatilization and from oxidation by the air blast. It may be employed for ores which are too poor in antimony to be smelted in reverberatory furnaces.

"Antimony ores are only exceptionally heated in crucibles, as the cost of fuel and labor is very high. The oxide, however, is reduced in these, as stated above."

Publications on Lake Superior Copper

The Lake Superior copper region is covered by various publications by the U. S. Geological Survey. The latest is Monograph 52, entitled "The Geology of the Lake Superior Region." It is by C. R. Van Hise and C. K. Leith. In addition there are the regular chapters of the annual reports on Mineral Resources. Also Monograph 5, "The Copper Bearing Rocks of Lake Superior," by R. D. Irving, has much interesting information on this subject. This monograph is out of print, but can be secured in most libraries.

PEAT INDUSTRY GRADUALLY IS BEING STABILIZED

Experience in the production of peat, gradually is resulting in the placing of this industry on a firm foundation. Prof. Charles A. Davis, of the U. S. Bureau of Mines, just has returned from several months spent in field work in one of the peat regions of Maine and in visiting peat-producing plants throughout the country.

Mr. Davis spent most of the summer in the southwestern part of Maine. He covered both the fresh and the salt water marshes with considerable thoroughness. This is the first time that this area has been inspected systematically with the idea of determining the extent of the occurrence of peat. Mr. Davis reports that some areas look very promising. His investigations will be covered in detail in a report which he will write.

While there has been no great increase in the amount of peat produced, or no particular increase in the capacity of plants, Mr. Davis found that most of the better conducted plants are making satisfactory profits.

Professor Davis, in connection with working up the data gathered this summer, also will continue his work on oil shales. This latter work is being done in cooperation with the U. S. Geological Survey.

The peat work in Maine was done by the Bureau of Mines, in cooperation with the U. S. Geological Survey and with the Geological Survey of Maine.

ACTIVE GOLD MINING IN PROGRESS NEAR WASHINGTON

It is not widely known that gold is produced within 14 miles of the National Capital.

This is the case, and the Ford mine, which is one mile west of the town of Potomac, Md., recently has changed hands and arrangements are being made for more comprehensive development.

The Harrison farm just east of the Ford property also has been sold and extensive prospecting is to begin.

The gold in this general area, which contains a number of small mines, is found in pockets, some of which are quite large. One pocket opened a few years ago contained \$7,400 worth of gold.

It was in this district that General Sawyer several years ago expended more than a million dollars in the development of the Sawyer mine. He erected a ten stamp mill on the property and did several hundred feet of drifting.

After several years' operation it was found impossible to extract the ore profitably, due to the large amount of dead work which had to be done between the occurrences of the pockets of gold.

Still there has been considerable interest in this district, and numerous transactions in mining property are recorded every year.

It is probable that mining in a small way will continue in southern Maryland for many years.

SELBY COMMISSION REPORT IS FAVORABLE TO OPERATORS OF SMELTERS

Installation of Bag House and Sintering Machines Resulted in Abatement of Nuisance, Experts Find—Much of Damage Claimed Result of Outside Causes, It is Pointed Out.

There is much consolation to smelter owners in the report of the Selby Smelter Commission, which just has been made public by the Bureau of Mines. In its 528 pages this report goes into the subject of damages by smelter smoke with a thoroughness which is most commendable. In general the conclusions are favorable to operators of smelters. It shows that much damage attributed to smelter smoke was of vastly different origin.

The commission consisted of J. A. Holmes, Director of the Bureau of Mines, chairman; Edward C. Franklin, Professor of Organic Chemistry, Leland-Stanford Junior University, and Ralph A. Gould, chemical engineer, secretary of the commission, in immediate charge of the investigations.

The commission concludes:

1. With respect to the visible element of the smoke from the Selby smelter:

(a) That prior to April 1, 1914, a nuisance, measured by the cumulative injury done to certain horses, was maintained in the smoke zone.

(b) That the installation of the bag house in connection with the sintering machines of the smelter has resulted in the abatement of this nuisance.

(c) That lead and arsenic from the smoke of the Selby smelter was deposited on the soil of the smoke zone the period of time included between the beginning of operations of the smelter and April 1, 1914, and that the quantity of these metals so deposited was of no economic importance and did not poison the soil or in any way produce a loss or reduction of crops.

(d) That the blackened appearance of many trees and plants in the smoke zone, which appearance is believed by many of the residents of the smoke zone to be due to a deposit of lead from the smelter smoke, is in fact not due to such cause. The so-called "lead deposit" results from the growth of a mold within the honeydew secreted by certain insects which infest the trees and plants and contains no lead whatever.

2. With respect to the sulphur dioxide contained in the smoke of the Selby smelter:

(a) That the Selby smelter has not maintained a nuisance with respect to producing within the smoke zone a disagreeable or objectionable odor, or with respect to disagreeably or injuriously affecting the throat and lungs of human beings or domestic animals living in the smoke zone.

(b) That the rare instances during the investigations of the commission when sulphur dioxide from the Selby smelter was present in the smoke zone in sufficient concentrations to be observed by the residents by the sense of smell do not constitute a nuisance; nor do these rare visitations prevent the residents of the smoke zone from the peaceful enjoyment of life and property.

(c) That the Selby smelter has not maintained a nuisance with respect to economic damage to trees, vines, shrubs, or growing crops of any kind within the smoke zone.

(d) That the Selby smelter has not maintained a nuisance with respect to the corrosion of wire screens or barbed wire in use within the smoke zone.

3. With respect to the future operation of the Selby smelter:

(a) That so long as the mechanical devices now used at the Selby smelter for clearing the smoke of the plant of its visible element are kept in operation the Selby smelter will not maintain a nuisance with reference to injury to horses or other domestic animals, or with reference to injury to the soil of the smoke zone; nor will a nuisance be maintained by the Selby smelter in these respects so long as the visible element is removed from the smoke by any means mechanical or otherwise.

(b) That the apparatus now installed at the Selby smelter which are used to eliminate the visible element of the smoke are subject to accident and are so constructed as to require occasional cleaning and repairing; and that, for the purpose of cleaning and repairing the apparatus so used, the Selby Smelting & Lead Co. will not maintain a nuisance in the smoke zone if it discharges visible smoke from the blast-furnace stack for a total period of no more than forty-eight hours in any one month of each calendar year; or if it discharges visible smoke from the roaster stack for a total period of no more than forty-eight hours in any one month of each calendar year.

(c) That during that portion of the year known as the "closed season"—that is, from March 15 to November 15 of each year—the emission of smoke into the atmosphere from the furnace known as the Ropp roaster will be productive of a nuisance in the smoke zone unless the visible element is removed from the smoke before it is discharged into the atmosphere.

(d) That so long as the total output of sulphur dioxide which is discharged through all of the stacks of the Selby smelter into the atmosphere is less than 80 tons per day of twenty-four hours during each hour of which day less than $3\frac{1}{3}$ tons of sulphur dioxide are discharged the smelter will not maintain a nuisance with respect to a disagreeable or objectionable odor or with respect to disagreeably or injuriously affecting the throat and lungs of human beings or domestic animals living within the smoke zone; that the smelter will not maintain a nuisance with reference to economic damage to trees, shrubs, vines, or growing crops of any kind growing within the smoke zone; that the smelter will not maintain a nuisance with reference to the corrosion of wire screens or barbed wire in use within the smoke zone; and that no nuisance of any kind will be maintained within the smoke zone with respect to sulphur dioxide under the above-stated conditions of operation.

The commission therefore finds, and so makes answer to the requirements of the stipulation, that the Selby Smelting & Lead Co. in the operation of its plant near Vallejo Junction, Contra Costa County, Cal., was, at the time of the organization of the commission, violating the terms of the decree of the injunction issuing from the Superior Court of Solano County, Cal., and was maintaining a nuisance with respect to cumulative injury to certain horses within the area of the southern portion of Solano County heretofore designated as the smoke zone; but that in installing proper apparatus for the elimination of the visible element of the smoke discharged from the plant the said Selby Smelting & Lead Co. has since April 1, 1914, complied in all respects with the terms of the decree of injunction both in letter and in spirit, and has not since that time and up to the present time, November 6, 1914, violated the terms of the said decree or maintained a nuisance in the area of the southern portion of Solano County, Cal., heretofore designated as the smoke zone.

The commission finds and makes known that by continuing the elimination of the visible element from the smoke discharged into the atmosphere from its plant near Vallejo Junction, Contra Costa County, Cal., and at all times maintaining the total output of sulphur dioxide from said plant at less than 80 tons per day of twenty-four hours, during each hour of which day less than $3\frac{1}{3}$ tons of sulphur dioxide are discharged, during the period of each year covered by the said injunction decree, then the Selby Smelting & Lead Co. will not violate the terms of the said decree of injunction and will not maintain a nuisance within the area of the southern portion of Solano County, Cal., heretofore designated as the smoke zone.

The commission finds and makes known that, by discharging visible smoke from the blast-furnace stack, during the cleaning or repairing of the apparatus by which the visible smoke is eliminated, for a total period of no more than forty-eight hours in any one month of the period covered by the said decree of

injunction; or by discharging visible smoke from the roaster stack, during the cleaning or repairing of the apparatus by which the visible smoke is eliminated, for a total period of no more than forty-eight hours in any one month of the period covered by the said decree of injunction the Selby Smelting & Lead Co. will not violate the terms of the said decree of injunction and will not maintain a nuisance within the area of the southern portion of Solano County, Cal., heretofore designated as the smoke zone.

The commission finds and makes known that, if the Selby Smelting & Lead Co., as the result of conditions of operation that may arise in the future, desires to use the furnaces known as the Ropp roaster during the period known as the "closed season," then, if the smoke from the said furnace is so treated before it is discharged into the atmosphere as to remove the dust and fume therefrom, the said company will not violate the terms of the said decree of injunction and will not maintain a nuisance within the area of the southern portion of Solano County, Cal., heretofore designated as the smoke zone, during the period covered by the said decree of injunction.

DO NOT BELIEVE RUMOR OF CORNER ON SVELTER

Not much stock in the rumor of a corner on spelter in England is taken by experts here. The recent statements that shells are not being remelted also is not believed. Information available here is that shells are used thirty or forty times.

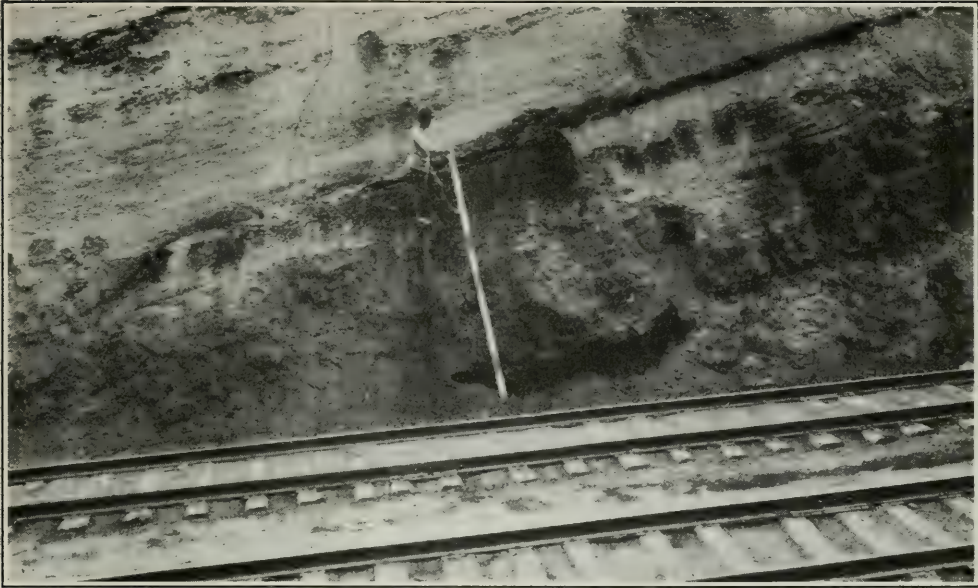
No very serious attempts are being made to forecast the trend of spelter prices. There are so many factors in the situation which cannot be known. Much depends on the length of the war.

It is not believed that the Germans are piling up any great quantities of zinc. Their demands for this metal are huge and with their need of men, it is considered very unlikely that large stocks are being accumulated at any point in Germany. It also is pointed out that even if the Allies were able to push far enough into Belgium to gain control of the Belgium zinc smelters, that both mines and smelters would be rendered useless by the Germans before they gave up the territory. Their rehabilitation would require months and possibly years.

Under no circumstances that can be foreseen will America be displaced as the principal source of zinc supply during the war. The output of zinc in this country is now more than two-thirds greater than it was before the war.

That war is using more zinc than is consumed in peace times is an impression which evidently is held widely. This is not the case, as statistics show. The consumption of spelter is considerably less, but the area producing it is so restricted that it results in an increase in the demand in the United States.

The regulation shell contains seventy-two parts of copper and twenty-eight parts of zinc.



COAL VEIN AT HANNA, WYO.
Eleven feet of good coal exposed in railroad cut.

ST. FRANCIS MOUNTAINS OLDEST ROCKS IN MISSOURI

The "Ozark Mountains" is a popular term covering the elevated, more or less rough, country known more precisely as the Ozark Uplift. It is bounded by the Arkansas Valley on the south, the Grand, Osage, Spring, and Missouri River valleys on the west and north, and by the Mississippi River lowlands on the east. In this area there are two regions of pronounced mountainous character, the Boston Mountains, parallel to the Arkansas Valley, and the St. Francis Mountains in the eastern part. The latter mountains cover a region about fifty miles in diameter. The rocks composing them are igneous for the most part, are the oldest rocks in Missouri, being of pre-Cambrian age and probably have been land at all times since their first upheaval. The other rocks of the Ozark region are sedimentary, were laid down around the St. Francis Mountains as a nucleus, and are therefore younger. The Ozark region, exclusive of the St. Francis Mountains, has alternated between land and sea conditions a number of times but finally assumed practically its present altitude at the close of Carboniferous time. From the standpoint of the date of their uplift into mountains, therefore, the St. Francis Mountains are pre-Cambrian and the Ozark "Mountains" are post-Carboniferous.

The Laurentian Hills of Canada, sometimes called the "Canadian Shield" are part of a large Archean area in Canada, embracing Labrador, most of Quebec and Ontario and a large area west of Hudson's Bay. The mountainous parts of this area are very old, dating from the late Archean. There are Archean rocks in Maine,

New Hampshire, the Adirondacks, and old "Appalachia," a term applied to the Archean area reaching from Maryland to Alabama. The mountains in this area, such as the Great Smoky Mountains, likewise date back to the Archean. The Appalachian Mountains proper, embracing the Blue Ridge and Alleghanies, are much younger, like the Ozarks, dating from the close of the Carboniferous. The Rocky Mountains are younger still, dating from the close of the Cretaceous.

OLD TIME MINING CAMP IS BEING REOPENED

The development of the flotation process has made possible the opening of the old Belmont mining camp in Nevada. This camp in the 60's and 70's was one of the most noted districts in the Southwest. The old dumps are being reworked and a number of the old mines are being reopened. It is a silver camp, the ore carrying very little gold.

As the treatment of the dumps is still in an experimental stage, those operating the plants do not desire to give out the amount of saving that is being made, but it is understood that the results obtained thus far are very encouraging.

Belmont is the old county-seat of Nye County. It was from Belmont that Jim Butler discovered the Tonapah camp.

Use More Sulphate of Copper

Sulphate of copper is finding greatly increased use in agricultural sprays and insecticides.

Recent Patents of Interest to Miners

ASSIGNED TO JEFFREY MFG. CO.

Mining Machine Chain, No. 1,159,861. This invention is by George B. Norris and Curtis C. Marshall of Columbus, Ohio, who have assigned it to the Jeffrey Manufacturing Co. of Columbus, Ohio.

It relates to improvements in cutter chains for coal mining machines. The object of the invention is to provide a chain of strong and simple construction which will furnish rigid support for the cutters and will run smoothly in its guides.

The mining machine chains commonly used have the cutters supported entirely by the cutter links. The length of the links between the pivotal connection is necessarily short, and the tendency is for the forces acting on the cutters to throw the forward end of the link outward. This causes a correspondingly greater pressure on the inner end and the tendency of the links to tilt causes much unnecessary friction, according to the inventors. For their chain, however, it is claimed that the effect is to increase the length of the base along which the force from any one cutter is distributed. Their invention is such, they state, that there is no tendency toward a tilting of the links.

ASSIGNED TO A. S. & R. CO.

Electrolytic Refining of Tin, No. 1,157,830. This invention is by Robert L. Whitehead, of Perth Amboy, N. J. It has been assigned to the American Smelting & Refining Co., of Maurer, N. J.

It relates to improvements in the production of electrolytically refined tin from impure tin cast in the form of anodes.

With regard to the practice of the invention Mr. Whitehead says:

"In the practice of the invention, I first produce from the impure tin itself, an electrolyte of such a character that it will insure the continued maintenance of the electrolytic deposition of the tin during the refining operation and which will itself be devoid of lead, which is an impurity usually present in the tin to be refined. So also, after the electrolyte has been initially produced, I maintain its purity, during the refining operation, by still further continuing to exclude the entrance of lead from the tin anodes into the electrolyte. The tin anodes usually contain gold, silver, or other values, in addition to lead, and I find that all of these adhere for the most part, as slimes, to the anodes, and may be removed therewith at the termination of the electrolytic treatment; or, in part, they fall to the bottom of the electrolytic tank, from which they may be withdrawn, when occasion requires.

"The expedient that I employ for preventing the entry of lead into solution in the electrolyte from the impure tin anodes is to employ in the electrolyte, during its preliminary formation and subsequently during the deposition of the tin therefrom upon the cathodes an agent which will convert the lead into a compound insoluble in the electrolyte. The agent that I prefer to employ for the purpose is sulphuric acid, which serves to convert the lead into lead sulphate, insoluble in the electrolyte which I employ."

ASSIGNED TO NEW JERSEY ZINC CO.

Separation of Minerals by Flotation, No. 1,159,713. This invention is by Lewis G. Rowand, of Brooklyn, N. Y. It is assigned to the New Jersey Zinc Co., of New York City.

It relates to improvements in the separation of metalliferous values from ores and slimes wherein the minerals to be separated are associated with gangue or other minerals not susceptible of selective flotation by the oil emulsion or the like, employed for that purpose.

The characteristic feature of the invention, according to Mr. Rowand, consists in feeding the material to be treated upon a traveling belt or other movable surface, which received a layer of the separating oil by contact with a suitable source of supply, and which feeds the material into a flotation tank, so that it will enter the water in the tank at the surface. The particles susceptible of flotation will be floated off into a collecting trough and the particles not capable of flotation will drop through the water and will be collected separately as tailings.

In passing down the incline the metalliferous particles to be separated will take on a surface coating of oil, whereas the particles which have no tendency to become coated remain unaffected. Consequently, when a mass of material is fed at a moderate rate upon the surface of the water, the coated particles, representing corresponding metalliferous values, will be buoyed up and floated off into the collecting trough, whereas the uncoated particles will fall by gravity to the bottom of the flotation tank.

LARGE AMALGAMATING AREA

Apparatus for Extracting Precious Metals, No. 1,160,485. This invention is by Victor I. Zachert, of San Francisco, and Pierre A. Brangier, of Agnew, Cal. One-third of it is assigned to Victor G. Bonaly, of San Francisco.

It is one of the objects of this invention to overcome various of the difficulties which surround ordinary methods of treatment and

to provide a simple, substantial, easily operated amalgamator which is capable of offering a large active amalgamating surface in which the pulp is advanced automatically without contamination with the ingressing pulp, in such a manner that every metal particle will be given ample opportunity to come in contact with the plates or mercury which are used to form the amalgam.

TO SEPARATE BLENDE AND GALENA

Process for Industrial Separation of Lead and Zinc Contained in the State of Sulphides, No. 1,157,153. This invention is by Guy de Bechi, of London.

Its object is to effect the separation of blende and galena in ores in which these substances are intimately mixed.

LARGE CRUSHING MACHINE

Ore Grinding Machine, No. 1,158,259. This invention is by Charles O. Michaelsen, of Omaha, Neb.

It relates to machines for grinding, crushing and pulverizing hard or soft ores, silica, gypsum, talc, shale, carbon or the like.

The idea is to provide a machine of large capacity. It employs the flat surfaces of two plates which oscillate. In a cycle of oscillation the plates alternately slide past each other in opposite directions, changing this direction for each semi-oscillation. The distance between the plates increases and decreases in the course of the movement.

ELECTRIC FEED

Magnetic Ore Separator, No. 1,157,543. This invention is by August F. Jobke, of Wilkinsburg, Pa.

One of the objects of the invention is to provide electrical means for feeding ore into a magnetic field by gravity and subjecting the gravity fed ore to an undulatory movement that causes the ore to be thoroughly agitated so as to expose such particles that are subjectable to a magnetic field, thereby allowing the magnetic field to attract such particles as would be covered and escape the magnetic field if the ore were carried through without being agitated.

OTHER PATENTS

Other patents granted were: No. 1,157,176, to Thomas M. Owens, of Sidney, New South Wales, Austria, separation of metallic sulphides from ores, assigned to Edward W. Culver, Sidney, New South Wales, Australia. No. 1,158,671-72-73-74-75, to Francis C. Frary, Minneapolis, Minn., and Sterling N. Temple, St. Paul, Minn., hard lead alloys, Temple assigns one-sixth of the whole right to Frary. No. 1,159,154, to Edgar A. Ashcroft, of London, England, apparatus for the electrolytic manufacture of alloys of light metals with heavier metals and the continuous treatment of such alloys for obtaining final products.

No. 1,159,154, to William Kowalski, Chicago, Ill., safety device for mining cars. No. 1,158,777, to A. L. Blair, Seattle, Wash., coal washer. No. 1,158,875, to O. J. Warman, of Cincinnati, Ohio, metal furnace, assignor, to the Buckeye Products Co., Cincinnati, Ohio. No. 1,158,913, to Hugh M. Leslie, Glasgow, Scotland, treatment of ores by the cyanide process. No. 1,158,514, to Hugh N. Leslie, Glasgow, Scotland, extraction of metals from their ores. No. 1,160,067, to Charles Goyn, of Gorham, Colo., mine car lubricator. No. 1,159,989, to Dmitry Alexandrowitch Peniakoff, of Brussels, Belgium, process of producing nitrogen compounds of aluminum and alkali or alkaline earth metals. No. 1,160,847, to Adolf Clemm, of Mannheim, Germany, chlorides or alkali earth chlorides. No. 1,160,431, to Grenville Mellen, of E. Orange, N. J., process for producing aluminum from clay, coalin, and other aluminum silicates, assignor of one-half to the United Aluminum Ingot Co., of New York. No. 1,160,430, to Grenville Mellen, Mt. Vernon, N. Y., process for melting aluminum or aluminum alloys. No. 1,160,660, to Jos. Secrist, of Nuttallburg, W. Va., mining machine. No. 1,160,502, to Frank Franz and E. R. Day, of Wallace, Idaho, ore-jig. No. 1,160,463, to Nils Testrup, London, England and Thomas Rigby, Dumfries, Scotland, assignors to the Wetcarbonizing Co., Limited, London, England, treatment of peat. No. 1,160,509, to William R. Heslewood, Oakland, Calif., method of smelting and incinerating, assigned to the Hydro Vacuum Smelting Co., Oakland, Calif. No. 1,160,621, to John H. Klefingier, M. W. Kryce and Charles R. Kuyell, of Great Falls, Mont., process for smelting ores. No. 1,157,945, to Nils D. Levin, of Columbus, Ohio, electric motor, assigned to the Jeffery Manufacturing Co., of Columbus, Ohio. No. 1,158,424, to Otto Banner, Easton, Pa., combined thrust and journal bearing, assigned to the Ingersoll-Rand Co., of Jersey City, N. J. No. 1,160,617, to Francis A. Jimerison, Athens, Pa., handle and inlet-controlling-valve construction for pneumatic tools, assigned to the Ingersoll-Rand Co., Jersey City, N. J. No. 1,160,648, to Caid H. Peck, Waverly, N. Y., drill-steel-turning device for percussive fluid-operated drills, assigned to the Ingersoll-Rand Co., of Jersey City, N. J. No. 1,160,562, to Otto Banner, Easton, Pa., covering mechanism for centrifugal blowing-engines, assigned to the Ingersoll-Rand Co., of Jersey City, N. J. No. 1,160,857, to Frederick C. Coseo, Columbus, Ohio, electric locomotive and cable-reeling mechanism, assigned to the Jeffery Manufacturing Co., of Columbus, Ohio.

Compete at Van Houten, N. Mex.

A very successful first-aid meet was held recently at Van Houten, N. Mex. Excellent records were made by the competing teams. A dinner followed the field meet. Moving pictures, furnished by the Bureau of Mines, were shown.



PANARAMA OF THE COAL

Where the Union Pacific Company has developed several valuable coal mines. On the left the overhead Hanna is shown

FOLLOWING GEOLOGIST'S TIP TENNESSEE FINDS OIL FIELD

Tennessee is producing an oil field. Unlike most States of the Union, Tennessee has very little territory in which the formation is favorable to the occurrence of oil and gas. Encouraging results, however, are being obtained in Scott County, just south of the Kentucky line, on the Cumberland plateau.

The first well was brought in last spring. Four wells have been drilled since then, three of which have come in as producers. The principal operations are being conducted by the Oneida Oil & Gas Co., near the town of Oneida.

Development of this district is due to statements made in a Geological Survey report. In this report it is said that this part of the Cumberland plateau holds the best chances for encountering oil and gas.

With its location based on information furnished by the United States Geological Survey, the camp has been characterized by the systematic method of its development. Before drilling W. N. Brown, of Washington, formerly with the Geological Survey, was summoned to do geo-structural mapping. With the geology of the region well worked out, drilling was begun and as a result three producers resulted from four holes. Oil was encountered in the Newman limestone at a depth of 800 feet.

Bendeman & Trees, large Pittsburgh operators, have taken extensive leases in this region and expect to develop them at once.

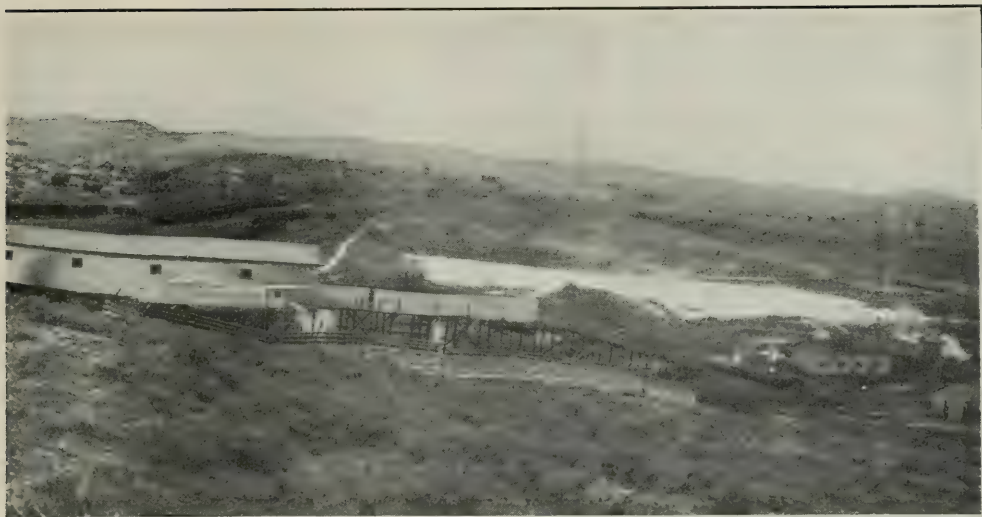
Tennessee is reported as being very proud of its only oil field and it is expected that the area will be the subject of study by the State's geologists.

ANTHRACITE A MANUFACTURING INDUSTRY BUT FEW KNOW IT

"With the acceleration in the production of anthracite due to the fall demand, comes the time-honored request from some retailer unfamiliar with the details of anthracite mining to 'open another chestnut chamber,'" says *Financial America*. The anthracite operators devoutly wish that it were as simple as that, and patiently write to their correspondent that anthracite as it appears at the mouth of the shaft is not fuel at all but a mixture of coal with slate and "bone" and dirt, commonly known as refuse, and that it has to be cleaned and sorted.

All of which goes to show that the knowledge is not yet common that the anthracite coal industry is a manufacturing as well as a mining enterprise, and that 20 per cent of the cost of production comes in putting the coal through the huge breakers erected for that purpose. The coal bill alone for the steam plans of these factories amounts to millions of dollars a year as it is now necessary to burn over 10 per cent of the entire output in order to operate them.

The function of these breakers is to eliminate the refuse and break and sort the coal into the required sizes. The sizing of coal requires a breaking down of the large lumps by means of rolls which are equipped with teeth so arranged as to crush the coal with the production of the least amount of the small and unprofitable sizes. The refuse must be eliminated by the big shakers and by hand on the picking tables. After that, the coal must pass for further refinement over screens, down spiral separators and through a water jig before it is ready for loading.



AREA AT HANNA, WYO..

equipment of the No. 4 Mine. In the foreground are the buildings of the No. 2 Mines. The town of in the background.

DIAMOND-BEARING ROCK HARD TO RECOGNIZE

Information concerning the diamond deposits of Pike County, Ark., has been given in the following Survey reports: Production of gems and precious stones in 1906, 1909 and 1913, and Bulletin 540.

It is not possible to describe the appearance of the soil formed by the weathering of diamond-bearing peridotite rock so that one can recognize definitely such an occurrence without having seen a similar one in another locality. In order to recognize an outcrop of the peridotite rocks it would be best to examine some of the prospects near Murfreesboro, securing samples of both the soil and the underlying rock.

Diamond-bearing earth is not generally washed through a sluice since the diamonds are not heavy enough to be sure of resting in the riffles. A specially designed wash pan or tank is generally used for the separation of diamonds from the matrix. Some of these have been put up at Murfreesboro.

The specific gravity of diamond is about 3.55. Heavy solutions may be used for testing the specific gravity of a diamond. Among these are Klein's solution of cadmium borotungstate in water, having a density of 3.6; Rohrbach's solution of barium-mercury iodide, with a density of 3.59, and Braun's solution of methylene iodide, with a density of 3.33. Diamonds would sink in Braun's solution but float in either Klein's or Rohrbach's.

Topaz is about the only other mineral likely to be confused with diamond which would give the same test and the difference between the diamond and topaz could then be determined by hardness.

GEOLOGISTS AND GEOGRAPHERS TO MEET HERE DEC. 28-JAN. 1

Geologists and geographers from all parts of the United States will be in Washington December 28-January 1, to attend the annual meeting of the Geological Society of America and the Association of American Geographers. Dr. T. W. Vaughan, of the Geological Survey, is chairman of the committee on arrangements. A. H. Brooks, F. L. Ransome and P. S. Smith are chairmen of subcommittees under Dr. Vaughan. This committee has gone to a considerable amount of work to arrange for a successful meeting.

These societies are holding their annual meeting in Washington on the invitation of the Geological Society of Washington.

On the night of December 28 the annual subscription dinner will be given. The Geological Society of Washington will entertain at a smoker in honor of the visiting delegates the night of December 29. The smoker will follow the address of Prof. A. P. Coleman, of Toronto, Canada, the retiring president. An exhibition of instruments used in geographical exploration will be on display the night of December 30. The Round Table Conference of Geographers will be held the night of December 31. This conference will be led by A. H. Brooks. It is expected that the meeting will come to a close by noon January 1.

The program for the day sessions is not complete. The address of the retiring president of the geographers will be heard December 31. R. E. Dodge, of the Teachers' College of New York, is president of the Association of American Geographers.

The sessions of the societies will be held in the auditorium of George Washington Medical School.

RECEPTION AND BANQUET ARE TENDERED TO DIRECTOR MANNING AT PITTSBURGH

Employees of Branch of Bureau of Mines and Faculty of Carnegie Institute of Technology Are Hosts to Mr. Manning—Pittsburgh Work Is Inspected

"Living, he gained men's good opinions and now, dead, he commends this orphan to the care of noble friends."

This was Van H. Manning's text for some informal remarks that he made at a reception tendered him and Mrs. Manning in Pittsburgh by the Carnegie Institute of Technology on the evening of November 8. This affair was attended by more than 600 guests. Before the reception the students of the division of Dramatic Arts presented "The Elder Brother." Following this Dr. A. A. Hammerschlag, director of the institute, presented Mr. Manning. Mr. Manning in responding told concisely of the objects for which the Bureau of Mines is striving.

This was on the occasion of Mr. Manning's first official visit as director of the United States Bureau of Mines to the Pittsburgh branch. Mrs. Manning accompanied the director and they were the objects of much attention.

The theme on which Mr. Manning based his speech refers to the late Dr. James A. Holmes, his predecessor as director of the Bureau of Mines. The Pittsburgh branch of the Bureau of Mines was Dr. Holmes' own idea. He based high hopes on the accomplishments of this part of the work. Mr. Manning thought it very fit that it should be termed an orphan, now that Dr. Holmes has passed to the Great Beyond. For this reason he declared it is doubly the duty of the Federal bureau to see that the orphan is well tended and that there is no lessening of the confidence that Dr. Holmes had in the success of the work at Pittsburgh.

On the following evening Mr. Manning was the guest of honor at a banquet given by the members of the Bureau of Mines at the Pittsburgh station. At this banquet there was no guest table, as the affair was tendered by all employees of the Bureau in Pittsburgh and the unskilled employees contributed just as much to the banquet as did the division chiefs. The men who happened to have the highest figures after their names on the payroll were not placed around a separate table. In consequence the hard-working miner rubbed elbows with the division chiefs. As a result the banquet was a great success and Mr. Manning believes that it will lead to a much closer relationship between the men who all are striving to advance the work that is being carried on by the Bureau.

The object of the trip to Pittsburgh was a thorough inspection of the work that is being

carried on there. Mr. Manning went through the divisions of the branch in detail and obtained first-hand knowledge of just how the work is being conducted there. He was interested greatly in experiments which were in progress in the mine just at the time of his visit. Tests were being made with coal dust from a mine in which an explosion had occurred, costing the lives of a number of the men. This dust was mixed with shale dust and tested out so as to establish the point at which it would lose its explosibility. It was found that the coal dust mixed with 40 per cent of shale dust still would explode. Mixed with 50 per cent of shale dust it was impossible to explode it. Work is continuing to find at what point between 40 and 50 per cent the dust can be made nonexplosible.

Mr. Manning also inspected the work that is in progress on the new building of the Bureau of Mines. The structure will be completed in April, 1917. All excavation has been completed. This work was delayed somewhat by the very hard rock that was encountered. The work should progress rapidly from this point on, Mr. Manning thinks.

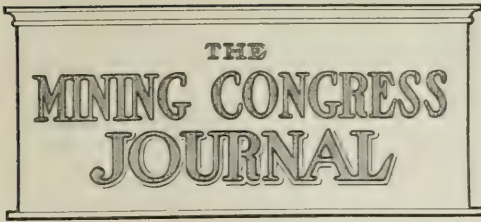
COAL IS MOST VALUABLE MINERAL; IRON LEADS METALS

The following is an extract from a letter written to a correspondent by the Geological Survey:

"As to which is the most valuable mineral that is used in this country, it depends upon how you wish to use the term. If you mean which mineral is the most valuable in the aggregate, undoubtedly coal is to be so considered. Iron is the most valuable of the metals. If you mean which mineral is sold for the greatest sum per unit of weight, then radium is probably to be so considered; the market value of which is about \$120,000 per gram (15.4 grains)."

Works on Alloys.

The Geological Survey has published nothing on alloys of lead and tin. Such alloys are treated in the following books: "Mixed Metals," by Arthur H. Hiorns; "Alloys and Their Industrial Applications," by Edward F. Law, and "The Metallic Alloys," by William T. Brannt.



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EDITORIALS

REVISED MINING LAWS SHOULD BE EXACTED

A large attendance is anticipated at the meeting of the mining men which will be held at Washington, December 16, under the auspices of the Mining and Metallurgical Society of America. It is hoped that special impetus will be given to the campaign looking to the enactment by Congress of a bill providing for a commission which, through public hearings in the principal mining centers of the United States may qualify itself to recommend to Congress a general revision of our mining laws, based upon a complete knowledge of the facts and the judgment of the practical mining men of the country.

Upon another page of this issue will be found the report of the American Mining Congress committee which, for several years, has been agitating this question and urging action of this character upon Congress. This report outlines recent activities of this committee and the results thus far accomplished. The need of general legislation on this subject has long been recognized. The

present laws governing mineral lands and mining operations thereon, have been in process of enactment and adjudication since the year 1866, when the first Congressional act was passed relating to mining. This act has been amended many times.

The rule of reason has been applied by such courts as understood mining conditions, while other courts have handed down decisions so ridiculous as to resemble both farce and fiction. Happily, the sensible decisions have been sustained, and the present system, as developed by the courts, is understandable and fairly workable.

It is generally recognized that a better system can be easily devised by practical men who understand mining conditions, and there has grown up a very general demand for revision but no agreement has been reached as to the particular amendments which are required.

The meeting of representatives of various organizations and interests which is to be held in Washington, December 16, promises to add more strength to the movement, and it is hoped that members of Congress may be made to realize the importance of prompt consideration of this subject.

The plan thus far advocated recommends no specific amendment, but urges a sane, practical plan through which Congress may obtain the information necessary to a complete understanding of the practical problems involved, and be made familiar with the recommendations of the practical men engaged in the business of mining.

PREPARES TO GATHER STATISTICS FOR 1915

Cards are to be sent out soon by the United States Geological Survey so that the producers of mineral products may have an opportunity to register the amount of their production during 1915. It is urged that all mining men cooperate with the Government in this effort to obtain absolutely all possible information in regard to the metal resources of the country.

VOLUNTEERS NEEDED FOR DIFFICULT TASK

One of the most difficult tasks of the officers of the Mining Congress is the selection of committees through which effective work can be accomplished. Particularly difficult has been the effort to select a committee on mining investments and protection to mining investors which could meet with some degree of satisfaction the great responsibilities and opportunities of this particular work.

At the ninth annual convention of the American Mining Congress held at Denver in 1906, then Governor George C. Pardee, of California, as chairman of a committee on this subject, presented to the convention a proposed law, making any misstatement concerning the value of any mining securities offered to the public a felony.

For the few years subsequent, the activities of the Congress in this behalf were directed toward the enactment of this law by the several States, a considerable number of which passed the law either as recommended or with some modifications. The enactment of this law, while it stood as a menace to those making unwarranted statements in order to dispose of mining shares, did not accomplish its full purpose because of a lack of publicity and because no special effort was made to enforce its provisions. The original committee regarded its proposal as a first long step toward preventing the sale of worthless stocks, mining and industrial.

Some time thereafter, the so-called "Blue Sky" law of Kansas came into prominence and public favor, and laws of this character were enacted in many states. This class of laws, while being effective in preventing the sale of stocks without merit, had a tendency to prevent the sale of meritorious stocks, and so far as mining investments are concerned, was practically prohibitive.

In most instances, these commissions were made up of bankers, who, from training and interest, are led to look with disfavor upon mining investments. Some of these laws have been declared unconstitutional, and much criticism has been

leveled against the radical features of nearly all of them.

The creation of conditions which would furnish reasonable protection to the investor in mining stocks, without making entirely prohibitive such investments, would be a great boon to the West, and furnish opportunity for money now seeking investment to find promising opportunities. Upon the other hand, it would lead to the development of many mining prospects, some of which would make productive and profitable mines, bringing development to the sections where located and furnishing for the use of the world the mineral thus produced.

The officers of the Mining Congress will welcome volunteers who will undertake to carry on work along these general lines.

MANNING WANTS BANQUETS CONDUCTED DEMOCRATICALLY

Director Manning, of the Bureau of Mines, made a good point on his recent visit to the Pittsburgh branch of his Bureau. He asked that there be no "high brow" table at a banquet which was tendered him by employees of the Bureau. Mr. Manning and his wife with the division chiefs and their wives, rubbed elbows with miners and their wives at the same table. As a result the banquet was a red-letter event to all.

There may be occasions when the so-called speakers' table is a necessity but as a rule it is rather an undemocratic institution. While few persons will acknowledge it, most guests who are not at the principle table feel a certain resentment. Even the most obscure guest is impressed with his littleness, while real hostility springs up in the breast of the man who considers that he is of sufficient note to be at the principal table himself.

Social standing too often is based on salary. One of the chief causes of friction between labor and capital is that they do not know one another better. Mr. Manning's plan could be used to advantage whenever miners and operators meet at a banquet.

"If" STANDS OUT PLAINLY IN POTASH SUGGESTION

"If" plays an important part in many calculations. Apparently it has a prominent place in the suggested use of copper tailings as a source of potash. Silicate minerals, however, have been stumbling blocks to chemists since the days of the alchemists. During recent years special efforts have been made to break through the guard of the silicates but none has been successful. So far as known, however, the idea of trying to get potash from silicates never before has been the object of such determined endeavor.

Before the war the incentive to look for potash was not great. Since the cutting off of the German supply efforts have been directed largely toward the discovery of deposits of potash. The necessity of making America independent of Europe in the matter of potash supply is such that any new angle of attacking the problem is welcome.

By pointing out another possible source of potash the Survey calls national attention to a problem. That it will be attacked earnestly by many chemists there is no doubt.

UTAH COPPER COMPANY OUTDOES CANAL EXCAVATING

Without any intent to belittle the remarkable work done by the excavating forces in digging the Panama Canal, attention is called to the fact that the Utah Copper Company excavates considerably more material each working day than was the case on the canal. The weekly average of excavation for the Utah Copper Company is close to 1,000,000 cubic yards. This includes, of course, ore and waste.

The highest weekly record made during the digging of the canal was 750,000 cubic yards.

Considerable importance was attached to the rate of excavation on the Isthmus. Sight was lost of the fact that various private enterprises were maintaining a much higher rate of excavation.

WRECKING OF CHEMICAL WORKS DASTARDLY DEED

A particularly heinous crime seems to have been perpetrated at Wyandotte, Mich., recently when the chemical works at that point was blown up. There were several fatalities and a long list of injured.

The plant was engaged in the manufacture of chlorine. It has been shown by the management that not a pound of this material has been shipped abroad or ever was intended for use by any of the nations at war. The product of the factory is being used entirely in this country.

According to the management there was no opportunity for the explosion, which wrecked the plant, to have been accidental. The damage to the plant was \$500,000.

Chlorine is the gas being used by the armies in France. The fact that the liquid chlorine is easily made and is readily convertible into a heavy gas that hangs near the ground, makes it peculiarly adaptable to such use.

Chlorine is made by electrolyzing salt. It is used largely in this country in de-tinning scrap. It is also used largely in bleaching.

Before the war, chlorine was a drug on the market. It could not be sold at 1 cent a pound. Shortly after the war opened, it began to rise and is now selling for 10 cents a pound.

LET MINING CONGRESS KNOW IF LAWS ARE NEEDED

If individual miners see the necessity for Federal legislation, they are urged to communicate with the American Mining Congress. It also would be well to take up the matter with the Congressman from the district most interested.

Any such matter brought to the attention of the American Mining Congress will receive careful consideration. The matter will be laid before Congressmen and Senators from the section affected and if it proves that the proposed legislation would be beneficial nationally every effort will be made to urge its presentation to the national body of lawmakers.

NEED OF COOPERATION ACCENTUATED BY WAR

Added attention to the value of cooperation has been brought before the world in a striking manner by the accomplishments of Germany since the beginning of the present war. This object lesson should be studied carefully by the mining men of America. Their industry is one which calls for much scientific research. Much of this research must be national in scope. Consequently there is no other industry in the United States which has a better claim on the Federal Government for aid. Lack of cooperation on the part of mining men is the principal reason why the industry is not receiving as much or more help as agriculture is receiving.

The mining men of the country must get together and make their influence felt. With 1,500 members, the American Mining Congress has been able to accomplish a great deal. What would it not be able to accomplish if it had the support of all who are interested in mining or allied industries? The limited work that the Government authorizes in the interest of the mining industry is hampered greatly by lack of appropriations. The funds of these bureaus are so limited that they are not able to carry out properly many branches of the work that they are expected to look after.

Every effort will be made this year to influence Congress to give more liberally to the mining industry. To accomplish this, however, will require tremendous influence. It is expected that appropriations for national defense will require large sums. In order to supply this money, with as little additional taxation as is possible, it is safe to say that the majority of the members of Congress will be very ready to cut into the meager appropriations allowed bureaus making researches in the interest of the mining industry.

The American Mining Congress representatives will do their utmost. Their influence, however, will increase in the same ratio as does the strength of their organization.

COLLECTIVE BARGAINING

In most of the discussions concerning the importance and the necessity of the organization of labor special stress is placed upon the necessity for "Collective Bargaining." It is claimed, and we believe rightfully, that the individual working man is at a great disadvantage in seeking employment, in competition with every other unemployed workman in his class, and who being impelled by the necessity of earning a living and usually of providing for a family is practically forced to accept a lower wage than he should receive for the service to be rendered in order that he may meet this personal responsibility. This necessity takes from him an important feature of a bargain, viz.: The right that his own mind, without undue pressure, shall be brought to an agreement with the other contracting party, the essential of every valid contract. There can be no question that every contract should represent an independent and essential agreement of minds. Because of this, it is usually acknowledged that "Collective Bargaining" is essential to the protection of the rights of the working man. It is equally essential to the employer.

While the employer consents to the application of this principle to the men, whom he employs, he also should have the right that his mind may meet without undue influence the mind of the other contracting party. Does this privilege exist where the labor organization, with the privilege of "collective bargaining," fully recognized, leaves to the employer the alternative of accepting his terms or closing down his property, and of enforcing the alternative by strikes, boycotts and in many instances, armed resistance to the authorities which undertake to protect the operator's property from incendiarism and dynamite?

Under these conditions the employer is denied a fundamental right, and there is no "collective bargaining" because there is no bargaining at all.

The Mining Congress Journal believes in cooperation in every line of work by which the highest efficiency and the most complete conservation may be made

effective. It does not believe in that kind of cooperation which destroys the right of others, and it does not believe that the settlement of disputes by force or intimidation upon either side can be made effective.

No question is ever settled until it is settled right.

WILL AID CAMPAIGN FOR USEFUL LEGISLATION

The American Mining Congress is much encouraged by the activity of the Mining and Metallurgical Society in the matter of securing a revision of the U. S. mining laws. The Mining Congress has worked alone so long and patiently to this end that it is gratifying to realize that other powerful influences at last are to be exerted in the same direction.

It will be very gratifying to the American Mining Congress if the efforts of the Mining and Metallurgical Society toward securing beneficial legislation will not end with the meeting called for December 16. A meeting of this kind is very beneficial but of vastly more importance is the day-to-day hammering away. It is hard to get lawmakers to sit through technical sessions but they are impressed at the evidence of concentrated effort. The details of the needs of the mining industry must be brought to their attention personally.

Securing friends for legislation favorable to mining is largely a matter of education. No great amount of work has to be done with the lawmakers from mining sections of the country. Men who know little of mining have to be instructed. The number of Congressmen and Senators is so large that it is beyond the present capacity of the Mining Congress to give personal attention to each man who should have detailed information as to the needs of the mining industry. Any organization which will lend a hand in this work may be certain of the most hearty cooperation of the American Mining Congress.

VANDALS' LOOT EXHIBIT OF STANFORD UNIVERSITY

A flagrant case of vandalism is that reported from the Panama-Pacific Exposition in the looting of the mineral exhibit of Stanford University. Four diamonds in the rough, two gold nuggets and two platinum nuggets, were stolen. In addition to their intrinsic value, the specimens stolen were prized highly by the Department of Geology of the University and had been secured at a considerable sacrifice and after long effort to obtain them.

DENVER HAS NEW WEEKLY MINING PUBLICATION

Mining Science has become *The Mining American*. *Mining Science*, which was published in Denver, was a monthly. *The Mining American* is a weekly. There is every evidence of lots of "pep" behind *The Mining American*. Edward G. Reinert and Charles J. Downey are the editors and publishers.

Mr. Reinert was the editor of *Mining Science*. The ability of these men is well known. The MINING CONGRESS JOURNAL hopes the new publication will attain success in an unusual degree.

ORIGINAL DRAWINGS OF MAPS VERY VALUABLE

Punishment of an employe of the Geological Survey recently for failing to take the proper precautions to protect an original drawing of a topographic map serves to call attention to the value of these sheets. The Survey provides a specially built safe in which these drawings are guarded. The intrinsic value of these maps varies from \$2,500 to \$6,000, but what is even more important is the length of time that would be required to make a duplicate.

Geologists and others handling these original drawings keep them close at hand. In case of any threatened danger the first thing looked after is the sheet.

MANY TAKE IRON PYRITE FOR GOLD; SEND IT TO SURVEY

The United States Geological Survey calls attention to the fact that it is prohibited by law from making analyses or assays primarily for the use of private parties or corporations. The Survey therefore gives to senders of rock or ore specimens only an offhand opinion, such as would be based on inspection or simple test of these specimens. Persons sending specimens and requesting such simple inspection should be particular to state whether the specimens are to be returned, as otherwise they will be destroyed. It might be a matter of surprise to know the large number of answers prepared daily by the Geological Survey, similar to the following:

"In reply to your letter, etc., . . . the material you send is merely a fragment of a quartz pebble. I regret to say that it has no probable value."

A great many other samples received prove to be iron pyrite, or "fool's gold," the shiny particles being taken by the writers for gold.

If an assay is desired, the proper course is to employ a private assayer or chemist, addresses of many of whom may be found in the technical journals, or to send the specimen to one of the government assay offices, which are located at Carson, Nev.; Seattle, Wash.; Boise, Idaho; Helena, Mont.; Deadwood, S. Dak., and Salt Lake City, Utah, or to the United States Mint at either Philadelphia, Pa., or New Orleans, La., at all of which a regular charge is made for such work.

DELEGATES TO MINING MEETING TO REGISTER AT BUREAU

Those attending the meeting called by the Mining and Metallurgical Society, which is to be held in Washington, December 16, to discuss matters in connection with the revision of mining laws, are expected to register at the Bureau of Mines. Desks will be provided at the Bureau of Mines for the use of mining men attending the meeting.

While the Bureau of Mines has no official connection with this meeting, Director Manning is anxious that every facility that will aid the work in hand, be placed at the disposal of the mining men in attendance.

INADEQUATE FACILITIES HANDICAP MAP WORK

The question regarding the revision of some of its maps is one of the problems that troubles the Survey due to its inability to revise the maps already issued as rapidly as it desires. The engraving division now issues about 110 new maps annually, representing the field work of the topographic engineers. Neither force, however, is large enough to carry on all of the revision work at the same time. The policy is to reprint all maps as soon as stocks on hand are exhausted, with such revisions as are practicable.

HANDLING LONG MAILING LISTS BECOMES A SCIENCE

Miners receiving the routine communications sent from the U. S. Geological Survey, probably do not realize how much equipment is necessary to insure the systematic handling of the long mailing lists.

On its lists the Survey has no less than 125,000 names and addresses.

Machines not unlike the linotype stamp on a metal blank the name and address. This in turn is used to address the envelopes. This stencil will wear indefinitely. It is keyed so that ready reference may be had to this name at any time. The stencil is placed in a holder in which also is placed its imprint. This permits of handling the stencils in filing cases such as those used for card systems.

One of the important reasons for maintaining a list of all the producers of minerals is to keep abreast of production. When requests go out for information in regard to production, a simple device provides for distinguishing those who have replied. If it is necessary to send a second request, all the stencils are placed in the addressing machine which automatically skips those whose replies have been received.

The envelope addressing machine has a capacity of 7,000 an hour. Another machine seals them at even a faster rate. The entire operation of handling the mailing list is mechanical.

This portion of the work has been revolutionized during the past five years. Formerly it was necessary to employ a large number of persons and to consume much more time in handling the mailing lists.

The mechanical equipment of this department also is used in other work. For instance the pay roll, which formerly required two and a half days to write up, is now struck off quickly in three hours. By the old method typographical errors were always possible. By the mechanical means now employed a typographical error is impossible and the amount printed on cash envelope and on payroll must agree, thus saving also the expense of checking these.

This department is directed very ably by Max Abel.

SIMPLE TEST DIFFERENTIATES SCUM OF OIL AND IRON OXIDE

It is very easy to determine whether a scum on water is petroleum or merely an oxide of iron. The test is made by stirring the water with a stick. If it is the oxide of iron, the iridescent scum will break up into small ragged fragments like the breaking up of ice. If it is oil, the scum will not break in that way but will drag with the stick. A wet blanket dipped into oil gathers up a quantity of it and the presence of oil may be confirmed by setting fire to the blanket and observing the combustion and odor.

Supreme Court Decisions

By far the most interesting decision of the Supreme Court at this term is that declaring unconstitutional the Arizona anti-alien act. The complete opinion as written by Justice Hughes, shorn of some of its legal references, is as follows:

Mr. Justice Hughes delivered the opinion of the court.

Under the initiative provision of the constitution of Arizona (Art. IV, sec. 1) there was adopted the following measure which was proclaimed by the Governor as a law of the State on December 14, 1914:

"An act to protect the citizens of the United States in their employment against non-citizens of the United States, in Arizona, and to provide penalties and punishment for the violation thereof.

"Be it enacted by the people of the State of Arizona:

"Section 1. Any company, corporation, partnership, association or individual who is, or may hereafter become an employer of more than five (5) workers at any one time, in the State of Arizona, regardless of kind or class of work, or sex of workers, shall employ not less than eighty (80) per cent qualified electors or native-born citizens of the United States or some sub-division thereof.

"Sec. 2. Any company, corporation, partnership, association or individual, their agent or agents, found guilty of violating any of the provisions of this act shall be guilty of a misdemeanor, and, upon conviction thereof, shall be subject to a fine of not less than one hundred (\$100) dollars, and imprisoned for not less than thirty (30) days.

"Sec. 3. Any employee who shall misrepresent, or make false statement, as to his or her nativity or citizenship, shall, upon conviction thereof, be subject to a fine of not less than one hundred (\$100) dollars, and imprisoned for not less than thirty (30) days." Laws of Arizona, 1915. Initiative Measure, p. 12.

Mike Raich (the appellee), a native of Austria and an inhabitant of the state of Arizona but not a qualified elector, was employed as a cook by the appellant, William Truax, Sr., in his restaurant in the city of Bisbee, Cochise County. Truax had nine employees, of whom seven were neither "native-born citizens" of the United States nor qualified electors. After the election at which the act was passed, Raich was informed by his employer that when the law was proclaimed, and solely by reason of its requirements and because of the fear of the penalties that would be incurred in case of its violation, he would be discharged. Thereupon, on December 15, 1914, Raich filed this bill in the

District Court of the United States for the District of Arizona, asserting among other things that the act denied to him the equal protection of the laws and hence was contrary to the Fourteenth Amendment of the Constitution of the United States. Wiley E. Jones, the attorney general of the State, and W. G. Gilmore, the county attorney of Cochise County, were made defendants in addition to the employer Truax, upon the allegation that these officers would prosecute the employer unless he complied with its terms and that in order to avoid such a prosecution the employer was about to discharge the complainant. Averring that there was no adequate remedy at law, the bill sought a decree declaring the act to be unconstitutional and restraining action thereunder.

Soon after the bill was filed, an application was made for an injunction *pendente lite*. After notice of this application, Truax was arrested for a violation of the act, upon a complaint prepared by one of the assistants in the office of the county attorney of Cochise County, and as it appeared that by reason of the determination of the officers to enforce the act there was danger of the complainant's immediate discharge from employment, the district judge granted a temporary restraining order.

The allegations of the bill were not controverted. The defendants joined in a motion to dismiss upon the grounds (1) that the suit was against the State of Arizona without its consent; (2) that it was sought to enjoin the enforcement of a criminal statute; (3) that the bill did not state facts sufficient to constitute a cause of action in equity; and (4) that there was an improper joinder of parties and the plaintiff was not entitled to sue for the relief asked. The application for an interlocutory injunction and the motion to dismiss were then heard before three judges, as required by section 266 of the Judicial Code. The motion to dismiss was denied and an interlocutory injunction restraining the defendants, the attorney general and the county attorney, and their successors and assistants, from enforcing the act against the defendant Truax was granted. This direct appeal has been taken.

As the bill is framed upon the theory that the act is unconstitutional and that the defendants, who are public officers concerned with the enforcement of the laws of the State, are about to proceed wrongfully to the complainant's injury through interference with his employment, it is established that the suit cannot be regarded as one against the State.

It is also settled that while a court of equity, generally speaking, has "no jurisdiction over

the prosecution, the punishment or the pardon of crimes or misdemeanors" a distinction obtains, and equitable jurisdiction exists to restrain criminal prosecutions under unconstitutional enactments, when the prevention of such prosecutions is essential to the safeguarding of rights of property. The right to earn a livelihood and to continue in employment unmolested by efforts to enforce void enactments should similarly be entitled to protection in the absence of adequate remedy at law. It is said that the bill does not show an employment for a term, and that under an employment at will the complainant could be discharged at any time for any reason or for no reason, the motive of the employer being immaterial. The conclusion, however, that is sought to be drawn is too broad. The fact that the employment is at the will of the parties, respectively, does not make it one at the will of others. The employee has manifest interest in the freedom of the employer to exercise his judgment without illegal interference or compulsion and, by the weight of authority, the unjustified interference of third persons is actionable although the employment is at will. It is further urged that the complainant cannot sue save to redress his own grievance; that is, that the servant cannot complain for the master, and that it is the master who is subject to prosecution, and not the complainant. But the act undertakes to operate directly upon the employment of aliens and if enforced would compel the employer to discharge a sufficient number of his employees to bring the alien quota within the prescribed limit. It sufficiently appears that the discharge of the complainant will be solely for the purpose of meeting the requirements of the act and avoiding threatened prosecution under its provisions. It is, therefore, idle to call the injury indirect or remote. It is also entirely clear that unless the enforcement of the act is restrained the complainant will have no adequate remedy, and hence we think that the case falls within the class in which, if the unconstitutionality of the act is shown, equitable relief may be had.

The question then is whether the act assailed is repugnant to the Fourteenth Amendment. Upon the allegations of the bill, it must be assumed that the complainant, a native of Austria, has been admitted to the United States under the Federal law. He was thus admitted with the privilege of entering and abiding in the United States, and hence of entering and abiding in any State in the Union. Being lawfully an inhabitant of Arizona, the complainant is entitled under the Fourteenth Amendment to the equal protection of its laws. The description—"any person within its jurisdiction"—as it has frequently been held, includes aliens. "These provisions" (referring to the due process and equal protection clauses of the amendment), "are universal in their application, to all persons within the territorial jurisdiction, without regard to any differences of race, color, or of nationality; and the equal protection of the

laws is a pledge of the protection of equal laws." The discrimination defined by the act does not pertain to the regulation or distribution of the public domain, or of the common property or resources of the people of the State, the enjoyment of which may be limited to its citizens as against both aliens and the citizens of other States. Thus in *McCready vs. Virginia*, 94 U. S. 391-396, the restriction to the citizens of Virginia of the right to plant oysters in one of its rivers was sustained upon the ground that the regulation related to the common property of the citizens of the State, and an analogous principle was involved in *Patsone vs. Pennsylvania*, 232 U. S. 138, 145, 146, where the discrimination against aliens upheld by the Court had for its object the protection of wild game within the States with respect to which it was said that the State could exercise its preserving power for the benefit of its own citizens if it pleased. The case now presented is not within these decisions, or within those relating to the devolution of real property. It should be added that the act is not limited to persons who are engaged on public work or receive the benefit of public moneys. The discrimination here involved is imposed upon the conduct of ordinary private enterprise.

The act, it will be observed, provides that every employer (whether corporation, partnership, or individual) who employs more than five workers at any one time "regardless of kind or class of work, or sex of workers" shall employ "not less than 80 per cent qualified electors or native-born citizens of the United States or some subdivision thereof." It thus covers the entire field of industry with the exception of enterprises that are relatively very small. Its application in the present case is to employment in a restaurant, the business of which requires nine employees. The purpose of an act must be found in its natural operation and effect, and the purpose of this act is not only plainly shown by its provisions, but it is frankly revealed in its title. It is there described as "An act to protect the citizens of the United States in their employment against non-citizens of the United States, in Arizona." As the appellants rightly say, there has been no subterfuge. It is an act aimed at the employment of aliens, as such, in the businesses described. Literally, its terms might be taken to include with aliens those naturalized citizens who by reason of change of residence might not be at the time qualified electors in any subdivision of the United States, but we are dealing with the main purpose of the statute, definitely stated, in the execution of which the complainant is to be forced out of his employment as a cook in a restaurant, simply because he is an alien.

It is sought to justify this act as an exercise of the power of the State to make reasonable classifications in legislating to promote the health, safety, morals and welfare of those within its jurisdiction. But this admitted authority, with the broad range of legislative discretion that it implies, does not go so far

as to make it possible for the State to deny to lawful inhabitants, because of their race or nationality, the ordinary means of earning a livelihood. It requires no argument to show that the right to work for a living in the common occupations of the community is of the very essence of the personal freedom and opportunity that it was the purpose of the amendment to secure. If this could be refused solely upon the ground of race or nationality, the prohibition of the denial to any person of the equal protection of the laws would be a barren form of words. It is no answer to say, as it is argued, that the act proceeds upon the assumption that "the employment of aliens unless restrained was a peril to the public welfare." The discrimination against aliens in the wide range of employments to which the act relates is made an end in itself and thus the authority to deny to aliens, upon the mere fact of their alienage, the right to obtain support in the ordinary fields of labor is necessarily involved. It must also be said that reasonable classification implies action consistent with the legitimate interests of the State, and it will not be disputed that these cannot be so broadly conceived as to bring them into hostility to exclusive Federal power. The authority to control immigration—to admit or exclude aliens—is vested solely in the Federal Government. The assertion of an authority to deny to aliens the opportunity of earning a livelihood when lawfully admitted to the State would be tantamount to the assertion of the right to deny them entrance and abode, for in ordinary cases they cannot live where they cannot work. And, if such a policy were permissible, the practical result would be that those lawfully admitted to the country under the authority of the acts of Congress, instead of enjoying in a substantial sense and in their full scope the privileges conferred by the admission, would be segregated in such of the States as chose to offer hospitality.

It is insisted that the act should be supported because it is not "a total deprivation of the right of the alien to labor;" that is, the restriction is limited to those businesses in which more than five workers are employed, and to the ratio fixed. It is emphasized that the employer in any line of business who employs more than five workers may employ aliens to the extent of 20 per cent of his employees. But the fallacy of this argument at once appears. If the State is at liberty to treat the employment of aliens as in itself a peril requiring restraint regardless of kind or class of work, it cannot be denied that the authority exists to make its measures to that end effective. If the restriction to 20 per cent now imposed is maintainable, the State undoubtedly has the power if it sees fit to make the percentage less. We have nothing before us to justify the limitation to 20 per cent save the judgment expressed in the enactment and if that is sufficient, it is difficult to see why the apprehension and conviction thus evidenced would not be sufficient were the restriction

extended so as to permit only 10 per cent of the employees to be aliens or even a less percentage, or were it made applicable to all businesses in which more than three workers were employed instead of applying to those employing more than five. We have frequently said that the legislature may recognize degrees of evil and adapt its legislation accordingly, but underlying the classification is the authority to deal with that at which the legislation is aimed. The restriction now sought to be sustained is such as to suggest no limit to the State's power of excluding aliens from employment if the principle underlying the prohibition of the act is conceded. No special public interest with respect to any particular business is shown that could possibly be deemed to support the enactment, for as we have said it relates to every sort. The discrimination is against aliens as such in competition with citizens in the described range of enterprises and in our opinion it clearly falls under the condemnation of the fundamental law.

The question of rights under treaties was not expressly presented by the bill, and, although mentioned in the argument, does not require attention in view of the invalidity of the act under the Fourteenth Amendment.

REYNOLDS DISSENTS

Justice McReynolds, dissenting, said:

I am unable to agree with the opinion of the majority of the court. It seems to me plain that this is a suit against a State to which the Eleventh Amendment declares "the judicial power of the United States shall not be construed to extend." If *Ex Parte Young*, 209 U. S. 123, and the cases following it, support the doctrine that Federal courts may enjoin the enforcement of criminal statutes enacted by State legislatures whenever the enjoyment of some constitutional right happens to be threatened with temporary interruption, they should be overruled in that regard. The simple, direct language of the amendment ought to be given effect, not refined away.

That the challenged act is invalid I think admits of no serious doubt.

Zeckendorf Wins

In the case of Albert Steinfeld, R. K. Shelton, J. N. Curtis, Silver Bell Copper Co., and Mammoth Copper Co. *vs.* Louis Zeckendorf and Hiram W. Fenner, receiver, appealed from and error to the Supreme Court of the State of Arizona, the judgment of the Arizona court was upheld.

Justice Holmes delivered the opinion of the court.

This case came here by appeal from the Supreme Court of Arizona while Arizona was still a territory. Before the decision by this court Arizona became a State, and the judgment, so far as now in controversy, having been reversed, the case was remanded "for such further proceedings as may not be inconsistent with the opinion of this court," the

formula usual in cases coming from a State. The ground for the present attempt to reopen the merits is that the State court has misinterpreted the mandate that it received.

The case is stated at length in the former decision. All that is necessary to explain the present question may be put in shorter form. The suit was brought by Zeckendorf as a stockholder in the Silver Bell Mining Co. to recover money alleged to belong to the company and appropriated by Steinfeld. There was a further cause of action alleged but that has been disposed of. The money represents the proceeds of the Silver Bell mine and a group of mines adjoining the Silver Bell and purchased by Steinfeld, it was assumed by the parties, as trustee for the company. Steinfeld sold all the mines for \$515,000, \$115,000 cash, \$400,000 in notes for \$100,000 each, and his action was confirmed. At the time of the conveyance to the purchaser it was agreed by a contract in writing that the purchase price should belong to the Silver Bell Copper Co., and in the same instrument it was provided that the four notes should be held by Steinfeld as trustee and as security against his personal obligations in the matter. Steinfeld received the cash and the proceeds of the first two notes, paid certain liabilities of the company and deposited the residue, except \$50,000 attached in his hands, in the Bank of California in his own name.

In December, 1903, Zeckendorf brought a suit to restrain the turning over of the deposited funds by the bank to Steinfeld, and on December 26, 1903, a stockholders' meeting was held, at which all parties were represented and a vote of rescission was passed, upon which the present question arises. For Steinfeld it is argued that the whole agreement was rescinded. The other side contends that the rescission went only to the clause giving Steinfeld a right to the personal custody of the money. The directors, consisting of Steinfeld and his creatures, although not understanding the rescission to go beyond the indemnity clause, passed a vote behind Zeckendorf's back under which the proceeds of the sale were divided and one-half given to Steinfeld. After the judgment of this court, the State court conceived itself bound by the mandate to enter judgment for the plaintiff and did so. It now is contended on Steinfeld's part that he never has had his day in court to present his case; for, it is said, the territorial court simply ruled as matter of law that the vote of rescission rescinded the contract *in toto*, and this court, if it thought, as it did, that the ruling was wrong, properly could do no more than to send the case back for a finding of fact as to the true purport of the vote. If this should be done Steinfeld alleges that he has evidence that he wishes to present.

A court is not necessarily precluded from construing a document because the construction is affected by facts and circumstances not open to dispute. But the question now is not whether this court was right or wrong, but what it did. The mandate issued within the

memory of present members of the court, and there is no doubt that the court below did what we intended that it should. In the time of Edward I, Hengham interrupted discussion of the Stat. Westm. II by saying, "We know it better than you, for we made it." However it may be as to a statute, the objection seems reasonable when applied to a mandate that has been followed as it was meant and the following words among others show clearly enough that we expressed our intent: "In our view the facts found show that . . . the subsequent attempt to rescind the action by which the proceeds of the sale of the English group of mines became the property of the Silver Bell Co. and to give the proceeds to Steinfeld must be held for naught." If the territory had not become a State, a judgment would have been ordered. The more reserved phrase was used by reason of the change, but with no change in what consistency with our opinion was deemed to require.

We see no reason for supposing that cases were intended to come to this court from Arizona in other than the usual form. Therefore in any event this appeal would have to be dismissed. To meet this possibility a writ of error was allowed at the last moment. We have considered the record as if made up under the writ. But apart from technical objections that have been urged, the only question that would be open is whether the judgment below was inconsistent with the opinion of this court, and as it very plainly is not, there is no reason for disturbing it. Our mandate was not concerned with the allowance of attorney's fees and some other matters that were argued, and therefore they present no Federal question and need not be considered.

COBALT PRICES DROP AS NEW FACTORY INCREASES THE OUTPUT

The decrease of the price of cobalt from \$2.25 to \$1.25, is due, it is believed, to the establishment of the plant of the American Smelting & Refining Co., at Maurer, N. J. This company is turning out increasing quantities of cobalt. It is not only a by-product from the smelting of cobalt-silver ores, but it is believed that anode muds, which are obtained in the electrolytic refining of copper, also are being made the source of cobalt. It is thought also that the speiss accumulated in the treating of Canadian ores is being worked up.

The Katanga ores from Africa which are being treated to the extent of 12,000 tons annually, contain a percentage of cobalt varying from 2.8 to 3.25 per cent.

Mineral Movement Increases

Nitrates, iron and copper ore continue to move through the Panama Canal in increasing quantities, as shown by the reports made to the Panama Canal office in this city.

SENATOR WALSH TELLS OF ACCOMPLISHMENTS BY ANACONDA COPPER COMPANY

Chairman of Senate Committee on Mines and Mining Outlines Work Being Done in
West for Securing Values from Low Grade Ores—Thinks Bureau
of Mines Is Doing Great Work

BY SENATOR THOMAS J. WALSH¹

Turning my thoughts a few evenings ago to what I might say concerning "Our Mineral Resources," I opened a Bible that lay on my desk, and curiously enough at the chapters that tell of the embellishment of Solomon's temple in gold, its altars and furnishings of brass, and the treasures of David in silver and gold stored within it, pursuant to his vow by the filial piety of the wisest of men. The reflection was naturally suggested that when in the primitive age the earth had been made to yield up so much of metallic wealth, there may come a time that will see nature's storehouse exhausted by the ever-increasing demands of industry, and the stupendous draft made by modern methods of mining and reduction. There is some comfort in the fact that with the development of mining and metallurgy deposits are made available that were formerly mere dross and a higher and higher percentage of the metal content of ores is being extracted.

ANACONDA'S ACCOMPLISHMENT

By the best methods available to the Anaconda Copper Mining Company, at a time no more remote than three years ago, .70 per cent of the copper content of the ores went away in the tailings. By treating them by the oil-floatation process and a modernized leaching process lately introduced the ore is reduced to .14 per cent, signifying a recovery of an additional 11.2 pounds of copper from every ton of ore, worth at current prices about \$2 or an added daily extraction by that company of a value not less than \$25,000. By the substitution of electrical energy for steam power, the same company saves 50 cents a ton on the 4,000,000 tons of ore it handles annually. By reason of the saving in operating costs thus effected, it is able to work successfully ores carrying five pounds less copper to the ton of ore than the lowest grade that was of commercial value before the more economical system was installed. Enormous deposits of low grade ores in the Butte camp, whose copper content could not hitherto be reckoned as a part of the world's reserve, will now yield bountifully. An interesting peculiarity of that region is that the mineralization was carried on so generously that all traces of the

walls of the veins are, as a rule, obliterated. The mineral solutions penetrated the adjacent country until it became ore as well as the vein filling—but lean in proportion to the distance from the main channel. The economies and metallurgical advances to which reference has been made will permit the mining of a wider body of rock adjacent to most of the great ore channels. In the same way the depth to which economic mining may be carried on is extended. To all intents and purposes new and productive fields have been opened up. Most of the porphyries could yield nothing were it not for the introduction of new methods of mining and new processes of reduction.

TREATS 1 PER CENT COPPER

The Utah Copper Company's mines, mills and smelts its ores at not to exceed \$1.25 per ton, a cost which will permit the profitable treatment of ore carrying no more than 1 per cent of copper. It takes 150,000,000 pounds of copper a year out of a hill that was negligible twenty years ago in any account of the world's reserves of that metal.

The Convey Placer Mining Company operates five dredges—one of which is the largest in the world—in Alden Gulch, the fabulous richness of whose sands gave rise to the first stampede to Montana. It was organized under the direction of Professor Shaler, of Harvard. Operating with steam power it was barely able to pay expenses by confining its activities to so much of the relatively rich ore as the pioneer miners had not taken. It has for a number of years past been using electricity for power and is reaping prodigious profit by cleaning up the whole gulch as its giant machines move forward.

MINERAL WEALTH BEING DEPLETED

The earth yields agricultural wealth without sensible diminution of its capacity under a wise husbandry. Its mineral wealth is suffering constant exhaustion. I learn that the great steel companies are providing against the day of a dearth of ores in this country by acquiring deposit in Cuba and Chili.

In my opinion the prime object of the existence of the Bureau of Mines is the con-

¹An address delivered in Washington at a banquet in honor of Van H. Manning, Director of the Bureau of Mines.

servation of the lives of the men who toil in the mines, and second to that is the conservation of our mineral wealth, by making those stores available to man, that though known are securely locked away. It is up to the Bureau to find the key to these treasure houses. We may trust to the enterprise and ingenuity of the mining engineer to apply known processes to the reduction of deposits that will yield at a profit under such. We must rely on the researches of the Bureau for the development of others that will eliminate waste and place all there is of value in the rocks at the service of man. I am glad to note that experiments are now being made to demonstrate the feasibility of extending potash commercially from mine tailings.

May I be pardoned for suggesting that the most intimate relationship ought to be cultivated between the Bureau and those actually engaged in mining? It is perhaps because it is comparatively new, but I am led to believe that the mining fraternity have not come to rely upon and have recourse to the Bureau of Mines as completely or as freely as is the case with the Geological Survey. There is no department of the Government dealing with industries in which the opportunities for work of a humanitarian character are greater, or in which the promise of material returns excels than the Bureau of Mines. Its friends confidently rely on its meeting every reasonable expectation under the capable management of Mr. Manning.

SURVEY IS COOPERATING IN POTASH EXPLORATIONS

In view of the urgent needs of the country for domestic supplies of potash and nitrate salts sufficient for the growing agricultural and industrial demands, the U. S. Geological Survey, in accordance with Congressional legislation, is making every effort to discover or to assist in the discovery somewhere in this country of deposits of such salts in amounts large enough to be exploited on a commercial scale. With this object in view the Survey is cooperating with prospectors and others.

The Survey will examine, by means of qualitative tests, samples sent in by various correspondents and inquirers provided the samples are accompanied by data as to the locality, source, and such other accessory information as the sender may possess. In some cases analyses will be made, though the Survey is prohibited by law from making such analyses especially at the request of private individuals or corporations, and from communicating the detailed results of such analyses to private parties in advance of publication to the country at large. After such samples have been examined, the senders, whether private individuals or companies, are informed as to whether the samples are rich or lean in potash, nitrate, etc., and some general opinion as to their character may be offered.

The Survey is undertaking as far as possible to have all deposits that are reported circum-

stantially with evidence deserving further investigation, examined by a competent geologist, who makes studies of the geology of the locality and personally collects samples for corroborative tests and analyses, the results of which are made public if of importance. Immediate publicity will be given to any discoveries of commercially important deposits which are so confirmed. In this way a large number of prospects and reported discoveries have been investigated, though it is to be regretted that, with the exception of the deposits in Searles Lake, California, the deposits of water-soluble salts have generally been found either too low in potash or nitrates, or too limited in amount—even though possibly of very high grade—to encourage commercial exploitation.

NOTABLE MINE DEVELOPMENT IN BURRO MOUNTAIN DISTRICT

One of the most notable mine developments in the United States is that of the Burro Mountain Copper Co., which will begin operations in about six months in the Tyrone district of New Mexico.

Sidney Paige, a geologist with the U. S. Geological Survey, just has returned from the Burro Mountain district, after several months spent in investigations there. He declared unqualifiedly that the district is a most promising one. It is a low grade camp and has a large amount of ore blocked out.

The Burro Mountain Copper Co., which is a Phelps-Dodge concern, is spending a large sum of money in order to operate on a large scale. They expect to begin operation on a 500-ton basis. Development is being done on secondarily enriched chalcocite bodies. Drilling also is being conducted in prospecting. While the Burro Mountain Co. is the only one now doing active work in the district, other companies have land in this vicinity and other operations are expected.

A model town is being built by the Burro Mountain company. The houses are being constructed of concrete. A \$50,000 concrete hospital is in course of erection. No expense is being spared to make this a model mining camp.

The ore bodies vary from 2 to 5 per cent copper. The flotation process will be used on a minor part of the product.

A spur of the El Paso and Southwestern R.R. furnishes the camp with adequate transportation facilities. This spur leaves the Santa Fe at White Water.

Some of the levels in the mines are down 800 feet.

The Silver City folio, covering this entire region, has been completed by the Geological Survey and will be issued soon.

Wants Logs of Oil Wells

The United States Geological Survey is anxious to secure logs of oil wells and drill holes. A book will be furnished on application in which the record may be kept.

Traffic Developments of the Month

Zinc Complaint Dismissed

In the case of the New Jersey Zinc Co. *vs.* Central Ry. Co. of New Jersey, the Commission dismissed the complaint.

In its decision the Commission said:

"Complainant is a corporation engaged in mining zinc ore, with offices at New York City, N. Y. By complaint, filed December 2, 1914, it challenges the reasonableness of demurrage charges of \$494, assessed at Jersey City, N. J., on forty-eight cars of zinc ore, moved to Jersey City from Franklin Junction, N. J., over an interstate route. Reparation is asked.

"The cars reached Jersey City late in July and early in August, 1914. They were intended for export to Rotterdam and space had been booked for a sailing about August 5. Because of war conditions abroad the vessel expected was never tendered. Despairing of securing means of sending the ore abroad complainant accepted delivery of the cars at Jersey City. On August 12, 1914, they were reconsigned at complainant's request to complainant's plant at Hazzard, Pa.

"The rate originally applied to the movement to Jersey City was the export rate of 95 cents per gross ton. When it was ascertained that the shipments were not to be exported the domestic rate of 7 cents per 100 pounds was substituted. Under defendant's tariffs thirty days' free time was and is allowed for unloading at the port of shipments for export. The free time allowance on reconsigned domestic shipments is 24 hours. The demurrage charges assessed covered detention of the cars for the period between the expiration of twenty-four hours' free time following arrival and August 12.

"Complainant contends that the exportation intended was prevented by conditions for which it was not at all responsible, and that therefore it should be relieved of the payment of the charges involved since they would not have accrued if the ore had been exported. Complainant apparently recognizes that there is no tariff authority for the relief asked and accordingly asks to have defendant's tariffs declared unreasonable for omitting to provide for the situation. Defendant contends that there is no justification for requiring it to bear a burden caused by the European war merely to afford relief to shippers.

"We agree with defendant's contention. It is not our function to condemn a carrier's charges unless they are unlawful, and determinations of illegality require consideration of the rights of carriers as well as of the rights of the shipper. It is well settled that the application of different charges to export traffic and to domestic traffic is justifiable. The shipments involved were subject either to the

tariffs governing export traffic or to the tariffs governing domestic traffic. The ore shipped was not exported, and the reasonableness of the demurrage charges applicable to domestic shipments is not challenged. The complaint accordingly will be dismissed."

Decide David Rutter Case.

In the case of David Rutter & Co. *vs.* Chicago & North Western Ry. Co., in which it was claimed that the defendants have been assessing unlawful, unreasonable, and discriminatory charges on carload shipments of coal from eastern mines to the complainant's yard at Evanston, Ill., the Commission held that—

1. In the absence of joint rates or a specific manner of constructing through rates the lowest combinations via the routes of movement are the lawful rates.

2. The lawful through rates from eastern mines to Evanston were and are the rates to Greenwood Street Station, plus the local distance rate of the Chicago & North Western to Evanston and a reconsigning charge under the conditions named in the tariff, except that where rates to Greenwood Street Station are limited by tariff to shipments unloaded there the combination is made on Chicago instead of on Greenwood Street Station.

3. The allegation of unjust discrimination is not sustained by the record.

4. The traffic here involved is through traffic and the reasonableness of the rates applicable thereto must be considered from the standpoint of the through rates in their entirety. So considered, the evidence does not show that they are unreasonable.

5. Defendants directed to refund all overcharges to complainant, with interest.

The report of the Commission was rendered by Commissioner Clark.

Rules on Mississippi Valley Rates

In the matter of rates on bituminous coal to Mississippi Valley territory, the Commission authorized the carriers to continue rates on coal from mines in Illinois, Kentucky, Tennessee, and Alabama to Memphis, Tenn., Natchez, Miss., Baton Rouge, Bayou Sara, Plantation group, Kenner, and New Orleans, La., and group, Gulfport, Miss., and Mobile, Ala., lower than rates to intermediate points.

Carriers were authorized to continue rates on coal from mines in Illinois and Kentucky to Greenville and Vicksburg, Miss., lower than rates to intermediate points.

Authority to continue rates on coal via indirect routes from mines in Illinois, Kentucky Tennessee and Alabama to junction and com-

mon points in Mississippi Valley territory lower than rates to intermediate points was granted.

Authority to continue rates on coal from mines in Illinois and Kentucky to Bemis, Gibbs, Humboldt, Jackson, McKenzie, Milan, Paris, Union City, Martin, and Rives, Tenn., lower than rates to intermediate points was denied.

Authority to continue rates via direct lines from Alabama mines to Aberdeen, Akerman, Columbus, Ellisville, Enterprise, Hattiesburg, Holly Springs, Jackson, Laurel, Newton, Meridian, Starkville, Vicksburg, and West Point, Miss., and Grand Junction and Middleton, Tenn., lower than rates to intermediate points was denied.

Reasonable maximum rates on bituminous coal from mines in Illinois, Kentucky, and Alabama to Dyersburg, Tenn., Grenada, Oxford, and Kosciusko, Miss., and other points were prescribed.

Chicago Switching Cases Decided.

In the coal switching reparation cases at Chicago, under the title of Thomas W. Gilmore & Co. *vs.* Chicago & North Western Ry. Co., the issue was whether or not complainants have been damaged and are entitled to reparation because of the payment of charges on carload shipments of coal. The Commission held—

1. That complainants in Gilmore & Co. *vs.* Chicago & North Western Ry. Co. and in Hinners Co. *vs.* North Western Ry. Co. have not proven that they were damaged by the payment of charges which were found to be unjustly discriminatory. In a discrimination case the measure of damage is not the difference between the two rates, but is a fact that must be proven with the same definiteness as would warrant a judgment in a court of law.

2. That complainants in Lill & Co. *vs.* C. M. & St. P. Ry. Co. have been damaged and are entitled to reparation to the extent of 10 cents per ton on certain shipments and 5 cents per ton on others because of charges which were found to be unreasonable. No damage was proven on that part of the charges which was found to be unjustly discriminatory.

Anthracite Ruling Postponed

The Commission has postponed until January 1 the effective date of its orders relating to rates, rules and practices governing the transportation of anthracite coal as laid down in its recent anthracite decision. An application for a rehearing of the case was said to be responsible for postponement.

The order was originally set for October 1 and was later postponed until December 1. The first postponement was due to the inability of the carriers to readjust their tariffs before the order became effective, and it was the opinion of the Commission officials that this same difficulty, coupled with the applica-

tion of the Lehigh and Wyoming region shipments of small anthracite for a readjustment of the rates between the two regions and tide-water on barley, buckwheat and rice sizes, was responsible for the additional postponement.

Reparation Allowed

Reparation has been allowed by the commission in the following cases: Electrical Metallurgical Co. *vs.* Kanawha & Michigan Ry. Co.; National Enameling & Stamping Co. *vs.* St. Louis, Iron Mountain & Southern R.R.

Increases Illinois Coal Rates

In the matter of coal from Illinois mines, the Commission following 1915 Western rate advance case, finds the proposed increased rates on bituminous coal from Illinois mines to west bank Mississippi River crossings and other points are justified.

Reparation Allowed

The Commission has granted reparation in the following mining cases: American Zinc Lead & Smelting Co. *vs.* Missouri Pacific; Eagle Smelting & Refining Works *vs.* Pennsylvania Ry.

Oral Argument Cancelled

Oral argument of the case of the American Refining Co. *vs.* the St. Louis and San Francisco R. R., assigned for December 15, has been cancelled.

Hearing Cancelled

The hearing in the case of the Pocahontas Coal Co. Inc. *vs.* the Norfolk & Western, which was assigned for November 15, has been cancelled.

Mica Company Gets Reparation

Reparation has been allowed by the Commission in the case of the Western Mica Mining & Milling Co., *vs.* the Denver & Rio Grande Railway.

Reparation Allowed

Reparation has been allowed by the Commission in the following cases of interest to miners: Bartlettsville Zinc Co. *vs.* Atchison Topeka & Santa Fe R. R.; American Smelting & Refining Co. *vs.* Lehigh Valley R. R.

Bureau of Mines Had Good Exhibit

The exhibit of the Bureau of Mines at the Western Pennsylvania Exposition called forth much complimentary comment.

SECRETARY LANE URGES MOBILIZATION OF THE MINERAL RESOURCES OF THE COUNTRY

Banquet Tendered to Van. H. Manning Made Occasion for Important Declarations with Regard to the Mining Industry—George Otis Smith and Senator Walsh Among Speakers

Van H. Manning was the guest of honor at a banquet November 20, tendered to him by the staffs of the Bureau of Mines and of the Geological Survey. The occasion was noteworthy to the mining industry at large in that it called forth important declarations from the Secretary of the Interior, the Director of the Geological Survey, Senator Walsh and the Secretary of the American Mining Congress.

Secretary Lane said in part:

Safety first and America first—these two are one and they are linked together in the Bureau of Mines and what it stands for. Safety for ourselves and safety for our country. The pre-eminence of our country, and what is to stop our country from being pre-eminent when we have the men who can find out the secrets of nature, and having reserved more of this foundation material which goes to make a great industrial people of our or any other nation, because we have passed now into an industrial world and war seems to be the chief industry. At least, it is an industry by itself and today it is being conducted as an expression of the most intense industrial life.

There was a time when a war was just a meeting of a lot of men with swords, and then they sang to the man who made the sword. But the sword plays no part today. Down at the bottom it means immense mineral reserves from development and from most intensive use. Barbed wire, mechanics, chauffeurs, railroads, cannon, high explosives, automobiles, everything that a great industrial nation has constitutes the army now when comes the war, and we are an army pre-eminently great in leading any onslaught, because we have mineral resources greater than those of any other country.

We can build a battleship out of the mines of the United States, and no other country can make that boast. And it is the plan to make the Bureau of Mines a great conservation institution, saving from waste, putting in use; and I have no doubt that the President was wise, as usual, when he selected to direct the work of that Bureau, Mr. Manning.

It has been a matter of very great pride to me to be identified with a department which has in its service men of such large information, ability and self-sacrifice as some of the chemists and engineers we have in the Bureau of Mines. Think of a boy com-

ing out of Swarthmore College some four or five years ago and, when the need of the war came, finding a process by which the ingredients of high explosives could be made out of our petroleum and by which we hope the price of gasoline to every Ford user in the United States will be reduced. I refer to Rittman.

I do not think you gentlemen appreciate the value of radium. There is one of the greatest mysteries of all this world to me. I believe that it is an agent by which inestimable good can be done for the men and women of our country and of all countries, and when we found locked up in Europe the process by which radium could be extracted from carnotite ore, we looked to the Bureau of Mines which produced a Parsons and a Moore who found such a process.

LEADS EDUCATIONAL INSTITUTIONS

Dr. George Otis Smith, director of the Geological Survey, said:

As an institution of higher learning, the United States Geological Survey easily stands first. I realize that this truth is of the type that is sometimes called axiomatic, but for the purpose of making a speech I am going to support my statement and prove the assertion by a few facts. It is not necessary, when I speak of the Geological Survey as an educational institution, for me to refer to the stately halls of learning which we chance to use at the present time as our quarters, nor do I need to point with pride to the illustrious names making up what we might call our faculty, nor do I need to review the long and varied courses making up our curriculum. Our toastmaster, himself a recent graduate, being one of last year's output, has already spoken to you about our production. How easy it is to speak of output and production when you are looking at E. W. Parker. He is referred to as a "corporation geologist" who is now on the outside doing whatever and whomever he can. And still he has not mentioned them all. The list is too long to give here. The fact we will agree upon is that the geology of North America is in safe hands.

Simply to show that the toastmaster has been modest in his statements, he failed to mention John Hays Hammond, who thirty-five years ago began as a humble assistant in the United States Geological Survey. But it

is not these professional geologists who are out after the money that I wish to speak of tonight. I might speak of the geologists who are helping others to know geology. We have them leading the departments of geology in all the great universities from Cambridge to Palo Alto, and there are some institutions in between such as Yale, Chicago, Minnesota, Wisconsin, while at Berkeley, under Secretary Lane, we have adopted a practice of lending the University of California a different geologist every year to serve on their faculty. And we have fitted out in a way these educational institutions with men who are the mainspring of activity. Now at Wisconsin, not being content with having simply a head of the Geological Department, we have in Van Hise a man who was raised to the presidency.

In the matter of State geologists, I have simply to mention Bain, De Wolf, Ashley, and Emmons, and you know what this Federal institution has done in giving the States the best. The class that I wish to speak of this evening, however, is the class of directors, our graduates who have become directors or something like directors. Among the scientific institutions there stands at the head the Smithsonian Institution, with as its secretary, Dr. Walcott, a man who took a long period of training with the Geological Survey; and some of you might next think of the Carnegie Institution, and there again we have a graduate of the Geological Survey in Dr. Woodward. Taking the Carnegie bureaus, of course, Dr. Arthur Day is at the head of the Geophysical Laboratory. Then, when they needed someone to command the Carnegie fleet in foreign waters, they took Peters and made of him an admiral. Also, important here in Washington is the Reclamation Service, and there we have placed two directors, Newell and Davis. Some of you may be surprised when I mentioned the fact that Mr. Graves, chief forester, at the head of the Forest Service, was a Survey field assistant in 1907 in the West, when Director Manning was in Indian Territory, and I was in Utah, all of us on the Survey. I might even go further and speak of the friend of Secretary Lane, Herbert C. Hoover, who has been director for the relief of a whole nation, the nation of Belgium. Mr. Hoover began as a geologic assistant twenty years ago. Coming back nearer home we have another director, our toastmaster this evening, the director of the Anthracite Trust. Then, in my idle moments, as I look out of my windows across to the north side of F Street, I read in letters bright and bold, "The Associated Geological Engineers." Knowing as I do that that office is occupied by Dr. David T. Day, another recent graduate, I suppose he can claim to be two or three directors.

But, of course, the real part of my speech to which I have now given the introduction, refers to Manning, of the class of 1910. Here is a director that is a director. You will see from some of the illustrations on our card

that he was tried in various capacities. He has had more hard knocks than his looks show, but after trying him in all these other places it was decided to make a director of him. That was the last resort. Five years ago when I happened to be at a place called Beverly, I stated what I knew of the record of Mr. Manning. I vouched for all of his career except his politics. President Taft agreed that Manning's sterling Democracy should not offset his other virtues. I think you will see that I am strictly neutral in speaking of his Democracy and his other virtues. He was appointed chief clerk of the Bureau of Mines. Mr. Secretary, when you vouched for him as the proper man to become director of the Bureau of Mines, I cannot really claim for the Geological Survey all that you really said of him, because in addition to his many years of training with the greatest educational institution he had the advantage of five years of excellent training in another institution, one which possibly some day may be as great as the mother institution. So while I regret that I cannot claim credit for the Geological Survey all that Director Manning is, I am glad that the rest of his career is to be credited to the Bureau of Mines. While all of us in the Geological Survey have taken great pride in the career of Topographer Manning, and Chief Clerk Manning, we are now even more proud of Director Manning and to him we pledge our heartiest support.

SPENDS MORE THAN GOVERNMENT

Mr. Callbreath, secretary of the American Mining Congress, closed a hurried description of the campaign which led to the creation of the Bureau of Mines by an urgent appeal for larger appropriations for those bureaus which served the mining industry, calling attention to Senator Walsh's statement concerning the increased saving effected by the Anaconda Copper Co. Mr. Callbreath made the statement that the Anaconda Copper Co. has spent more money in investigation and research work for the benefit of its own business than the Government of the United States has spent during its whole history, looking to the better treatment processes for the saving of mineral values.

"When a private company finds it so profitable to carry on research work for its own benefit, surely the Federal Government, for the benefit of the mining industry as a whole, can afford largely increased expenditures in this behalf."

Samuel Sanford, editor of the *Bureau of Mines*, spoke on "What We Think of Him." His complimentary remarks about Mr. Manning were in the best of taste and very evidently expressed the views of the employees of the Bureau.

E. W. Parker, formerly of the Geological Survey and now with the anthracite coal companies, acted as toastmaster. In introducing Senator Walsh he said:

Man in his present state of development depends for life, labor, and happiness upon a few basic industries. The one springs forth through the earth's surface, the other are the treasures hidden below the surface. Between these, of course, there is a great difference. In agriculture, seed time and harvest follow each other and the products are gathered perennially, but in mining the products once taken from the interior of the earth are never replenished. The products of agriculture are, however, chiefly consumed in their utilization for men. In mining, the products, with the exception of fuels, are due to become part of the permanent wealth of the country. They are not destroyed and their utilization is for the benefit of man. It was not until after the close of the Civil War that the mining industry really began to have any recognition from the Federal Government. It was in 1870 that the first real census of the mining industry was taken. I must drop into statistics every once in a while. In 1881 our mineral products amounted to \$365,000,000. In 1899 the products exceeded one billion dollars for the first time, and in eight years more they exceeded two billion dollars. Two mineral products alone in 1913 exceeded the total of the entire mineral production in the United States in 1888. Everyone now recognizes that the mining industry is of some importance.

Director Manning in concluding his acknowledgment of the honor tendered him said:

"I want your friendship among the material things of life, and to make my administration successful I must retain it. I am grateful to the President of the United States for my appointment as director of the Bureau of Mines; grateful to the Secretary of the Interior, who has assumed great responsibility in my appointment, and grateful to you for the confidence you have expressed in me tonight by assembling here to do me honor."

The remarks of Senator Walsh appear in full in another part of this issue.

The guests were W. W. Adams, G. H. Ashley, Mr. and Mrs. E. J. Ayers, Mr. and Mrs. F. F. Bailey and Mr. and Mrs. O. Bowles, Morris Bien, E. C. Barnard, Frank Bond, Thomas M. Baker, J. H. Brickenstein, Mr. and Mrs. Clifford K. Berryman, Miss Frances B. Burt, Mr. and Mrs. A. H. Brooks, Mr. and Mrs. J. L. Cochran, J. B. Callahan, Mr. and Mrs. J. F. Callbreath, Mr. and Mrs. F. C. Crass, Mr. and Mrs. M. R. Campbell, Mr. and Mrs. H. F. Clark, Mr. and Mrs. C. B. Dutton, Mr. and Mrs. C. A. Davis, Mr. and Mrs. J. D. Davis, Mr. and Mrs. A. P. Davis, Dr. and Mrs. David T. Day, Mr. and Mrs. George W. Evans, Charles Enzian, J. G. Fairchild, Mr. and Mrs. A. H. Fay, E. B. Fox, Representative and Mrs. M. D. Foster, Claude Galihier, Miss L. S. Gerry, Mr. and Mrs. Lewis Garthe, W. Y. Handy, A. J. Hendley, G. A. Hulett, Princeton, N. J.; R. L. Humphrey, Philadelphia; G. Herbert, Miss Katherine Hitchcock, John C. Hoyt, Mr. and Mrs. Hennen Jennings, first assistant

secretary of the interior and Mrs. A. A. Jones, J. W. Kreutner, H. L. Kays, S. J. Kubel, Secretary of the Interior and Mrs. Franklin K. Lane, Capt. A. F. Lucas, M. F. Leopold, W. J. Lloyd, D. A. Lyon, Salt Lake City, Utah; H. A. Meyer, Mr. and Mrs. E. B. Meritt, Malcolm McDowell, Miss H. C. McGown, H. D. McCaskey, Mr. and Mrs. R. C. McKinney, J. Middleton, Mr. and Mrs. Henry Munroe, Mrs. Jenny Munroe, Mr. and Mrs. W. C. Mendenhall, S. T. Mather, J. F. Newton, Dr. Charles L. Parsons, Miss Enith Parsons, Miss Anna G. Parsons, Mr. and Mrs. George S. Pope, Mr. and Mrs. W. J. Peters, Mr. and Mrs. E. W. Parker, Sidney Paige, G. S. Rice, Pittsburgh, Pa.; C. T. Robertson, Mr. and Mrs. P. M. Riefkin, Mr. and Mrs. W. A. Ryan, Miss Ryan, Mr. and Mrs. James R. Robinson, Pittsburgh, Pa.; H. C. Rizer, Miss Rizer, Mr. and Mrs. S. Sanford, Dr. S. W. Stratton, Mr. and Mrs. J. W. Swift, Mrs. E. F. Spofford, Ned H. Snyder, Miss Esther I. Susan, Thomas G. Steward, Miss Stevens, Mr. and Mrs. A. C. Spencer, Philip S. Smith, Miss Mai F. Smith, Frank Sutton, Mr. and Mrs. Glenn S. Smith, George O. Smith, Assistant Secretary and Mrs. Bo Sweeney, H. E. Tufft, J. W. Thompson, Mr. and Mrs. W. R. Talbot, Pittsburgh, Pa.; Mr. and Mrs. Clay Tallman, Mr. and Mrs. Clement S. Ucker, T. W. Vaughn, U. B. White, S. G. Wiley, Mr. and Mrs. J. M. Williams, L. R. Wilson, Peter M. Wilson, Mr. and Mrs. David White, Mr. and Mrs. A. M. Walker, Mr. and Mrs. J. M. Whitman, Mr. and Mrs. W. H. Wheeler, and Senator and Mrs. Thomas J. Walsh.

MONTANA POWER COMPANY GETS PRELIMINARY PERMIT

A preliminary permit has been issued by the Geological Survey to the Montana Power Co., which proposes to establish a new power plant on the Madison River. The company already has two plants on this river. The No. 3 plant will develop 20,000 horsepower.

The Montana Power Co. controls 98 per cent of the developed power in Montana. It has under construction and in operation 221,000 horsepower. In all, this company has developed or has in sight 356,000 horsepower. Twenty-five thousand horsepower of this total is consumed in the operation of mines and an additional 18,000 horsepower is utilized at copper smelting plants at Anaconda and Great Falls. Also more than fifty towns are furnished with electricity and 430 miles of the Chicago, Milwaukee & St. Paul R.R. will be electrified.

Developing Manganese Properties

High-grade manganese ores are not produced in great quantities in the United States. Some of the mines in Virginia have a limited output of high-grade ores. Other promising deposits are being developed near Globe, Ariz.

Recent Legal Decisions

In an action for damages by a complainant against an oil company as the owner of lands for the failure of such oil company to deliver to the complainant a lease supported by a fee title to certain oil lands, together with an oil well assumed to be located thereon, wherein the complainant alleged that the defendant land owner represented that it was the owner in fee simple title of the real estate described and that there was located thereon a certain oil well capable of producing fifty barrels per day and representing that there was located adjacent to such land, and which would be available for the complainant's use, a standard drilling rig, boiler and engine in good condition, with a complete outfit of drilling tools and a large footage of casing; and alleging further that he had paid on account of the rental reserved a large sum of money, and that the drilling rig, boiler, engine and drilling tools were not in good condition and that the oil company refused to deliver a lease to 160 acres of proven oil land of which it was vested with a fee simple title, a judgment for \$5,200 damages cannot be sustained where the findings of the court are not definite and do not show the separate items of damages making the sum total, although the findings are definite as to some of the particular items of damages; and the judgment for the return of the money paid as part consideration of the lease cannot be upheld where the action did not proceed upon the theory of rescission, and where there was no offer to rescind or return the consideration and where it is not alleged that the lease which the complainant obtained was without value.

Hullinger vs. Big Sespe Oil Co. (California), 151 Pacific, 369; August, 1915.

Where a mining corporation with the approval of its stockholders leased to another corporation for a term of 999 years all its property, consisting of a manufacturing plant, together with the occupied and unoccupied grounds connected therewith, its mines and quarries, and roads and ways connecting the same, and an amount in acreage of coal lands and other lands connected with its mines and works, not to exceed in the aggregate 10,000 acres, and assigned and transferred to the lessee all its cash, bills receiveable, accounts, licenses, leases, contracts, agreements, judgments, mortgages, stocks, and bonds, and where the lessee agreed to pay as rental a sum equal to 4 per cent upon the outstanding capital stock of the lessor, together with a further sum not exceeding \$5,000 to cover the cost of the maintenance of the organization of the

lessor corporation, the rentals, except such cash sum, to be paid direct to the stockholders of the leasing corporation; and where the lessor corporation has maintained its corporate existence merely that it may exist as landlord and lessor, and to this end its stockholders have annually elected a board of directors and other officers and maintained books for the transfer of its capital stock, but has received no income other than as above set forth, and has done nothing else whatsoever in its corporate capacity, and has no quick assets, cash, or bank account, such lessor corporation is not liable for a special excise tax, under the corporation act of August 5, 1909 (36 Stat., 112), assessed against it as a corporation having a capital stock and engaged in business; and where the lessee corporation paid the tax levied under protest and to prevent the leased property from being levied upon and sold at tax sale, it may maintain an action to recover the same.

Cambria Steel Co. vs. McCoach, 225 Federal, 278, p. 279; July, 1915.

Where a mining company leased its mines and mineral lands and sold and assigned its personal property and chooses in action to a lessee corporation and for which the stockholders were to receive a certain annual stated percentage on the amount of stock, and the corporation was to be paid a certain stated sum for the purpose of maintaining its corporate existence as landlord and lessor, and held the remainder of its mineral lands for the purpose of supplying from time to time the lessee lands and mines in lieu of lands and mines described in the lease and which may from time to time be surrendered by the lessee to the lessor, is not doing business within the meaning of the corporation tax act of August 5, 1909 (36 Stat., 112), and is not subject to an excise tax under the statute, as the corporation in such case falls within the distinction that the right of income from outside property or investments of a corporation that is otherwise engaged in business, in which event the investment income may be added to the business income in order to arrive at the measure of the tax; and the right of income from property or investments of a corporation that is not engaged in business, except the business of owning property, maintaining the investments, collecting the income and dividing it among its stockholders, and in the former case the tax is payable, while in the latter it is not.

Cambria Steel Co. vs. McCoach, 225 Federal, 278, p. 282; July, 1915.

TWO COWS PLAY IMPORTANT PART IN THE MINE-RESCUE WORKER'S PHYSICAL TRAINING

The Bureau of Mines attempts to keep up with all those who have been granted certificates for first-aid or mine-rescue work. Among the various requests sent out from time to time is one asking for details of work done to keep in training. One recent reply is as follows:

"Six a. m. arise; clean two cow stalls; clean two cows; feed and water two cows; milk two cows; lead two cows out to pasture and stake them; feed and water seventy chickens; feed and water sixteen ducks: 7.30 a. m., eat breakfast: 8.15 a. m., ride 6 miles to office on motorcycles; 4.15 p. m., ride 6 miles home: 7. p. m., bring in two cows from pasture; feed and water two cows; milk two cows."

It is understood that the Bureau of Mines experts consider that this work is sufficient to keep a holder of one of its certificates in good physical trim.

TUNGSTEN USED PRINCIPALLY IN MAKING OF TOOL STEEL

Tungsten which has been brought into such prominence by the war, finds its great use in the making of ferro-tungsten and metallic tungsten for introduction in tool steels. Smaller uses are for making the filaments of incandescent lamps, contacts, and for Roentgen ray apparatus. The following persons are purchasers of tungsten ores:

Atkins, Kroll & Co., 311 California Street, San Francisco, Cal.
Bethlehem Steel Co., South Bethlehem, Pa.
Chemical Products Co., P. O. Box 1812, Washington, D. C. (J. R. Cain, General Manager).
Crucible Steel Co. of America, Pittsburgh, Pa.
Electro Metallurgical Co., Niagara Falls, N. Y.
Primos Chemical Co., Primos, Pa.
David Taylor & Co., Boston Bldg., Salt Lake City, Utah.
Vanadium-Alloys Steel Co., Latrobe, Pa.
Wegland, Samuel A., 11750 Michigan Ave., Chicago, Ill.
Wolf Tongue Mining Co., Boulder, Colo.
Wood, Henry E., & Co., 1734 Arapahoe Street, Denver, Colo.
York Metal and Alloys Co., York, Pa.

INDIANA'S STATE-WIDE FIRST- AID MEET A SUCCESS

Indiana's State-wide first-aid and mine-rescue meet, which was held recently at Bicknell, was well attended. The high development that has been attained by these crews was demonstrated very clearly. A number of Bureau of Mines men were in attendance and aided in carrying out of the extensive program.

LOUISIANA BULLETIN BEING BROUGHT UP TO DATE

During the past two years the U. S. Geological Survey has made examinations at most of the localities in northern Louisiana where new exploration has been in progress or where oil and gas surface indications, apparently worthy of attention, have been brought to the notice of the Survey.

In many cases, however, the character of the topography and the dearth of exposure of the hard strata have been such as to make impossible the detection of the structure of the concealed strata in advance of a considerable amount of wildcat drilling.

The results of the examinations thus far accomplished or now in progress will probably be prepared for publication within a few months or will be summarized in a general report on the oil and gas fields of Louisiana, which is now in progress. This report will supersede Bulletin 429.

POPULAR INTEREST IN PETROLEUM SHOWS SIGNS OF INCREASING

Due to the number of inquiries which are coming to the American Mining Congress for information in regard to petroleum statistics, it may be stated that the Geological Survey press bulletin No. 226 contains a complete statement of the marketed production and value of petroleum in the United States in 1913 and 1914. The 1913 report covering the production of petroleum in the United States is the latest detailed work available. The report for 1914, however, is in course of publication and will be available very shortly.

Judging from correspondence reaching the Mining Congress there is considerable increase in the amount of popular interest in petroleum.

Compliments Mining Congress Journal

Theo. F. Van Wagenen, a mining engineer of note, who makes his headquarters in Denver, writes as follows in regard to the MINING CONGRESS JOURNAL:

"I find the MINING CONGRESS JOURNAL a very welcome visitor. You are managing to gather a great deal of desirable information for its pages. It is in condensed shape for the busy man. The black head lines make possible easy reference. It suits me to a T. I have little time for long-winded editorials and disquisitions."

Cordon Advance Maps Out

A limited edition of advance copies of the map of the Cordon, Ore., quadrangle has been issued by the United States Geological Survey.

RANSOME SEES PROMISE IN ARIZONA QUICKSILVER

Several encouraging facts are brought out by F. L. Ransome, of the United States Geological Survey, in his report on the quicksilver deposits of the Mazatzal range of Arizona. In part he says:

"Not enough mining work has been done at the time of visit to determine whether the quicksilver deposits of the Sunflower district are susceptible of profitable exploitation. The geologic facts of occurrence and the sampling by Mr. Hutchinson indicate that the parts of the lodes of minable dimensions now exposed to view carry no more than 3 or 4 per cent of quicksilver at the most, although exceptional stringers here or these which might be sorted out from the broken ore are of much higher grade. To obtain a 3 or 4 per cent product—that is, \$60 to \$80 ore at present prices—considerable sorting would have to be done, with rejection of three-fourths or more of the rock broken. The chances for obtaining considerable quantities of 2 per cent or \$40 ore with only moderate sorting appear to be good.

"When it is remembered that the New Idria mine in California, the largest producer of quicksilver in the United States, has for some years been making substantial profits on ore from which 0.5 to 1 per cent of quicksilver is won, it is evident that the Mazatzal deposits have considerable promise. Although costs are probably lower in California than in Arizona, the situation of the New Idria mine is comparable with that of the Arizona deposits in that the mine has a 60-mile wagon haul to the nearest railway. Mr. Hutchinson's sampling, while thoroughly reliable, was only preliminary to possible work and was rendered difficult by the lack of development. Before the deposits can be appraised at their probable value, additional sampling will be necessary. This sampling should be directed particularly to the estimation of the probable available quantity of ore of the minimum grade that can be profitably worked without sorting. To what width, for example, can a lode be mined as a whole to get a 1 to 2 per cent ore and how much of such ore can reasonably be considered available?

"Facts that promise well for future exploitation are the undoubted persistence of the lodes for long distances over the surface and the lack of any evidence of decrease of tenor with increase in depth. Too little has been done to prove that the lodes continue downward without diminution in quicksilver content, and it is generally recognized that quicksilver ores as a rule are not deposited at as great depth as some other ores. Lindgren states that no quicksilver deposit has been worked to a depth of 2,000 feet below its outcrop. On the other hand, the work already done on these deposits gives no foundation for a belief that the cinnabar is less abundant at moderate depth than near the surface.

"The small quantity of quicksilver thus far

produced has been obtained by simply retorting the ore as mined, enough lime being produced from the gangue to effect reduction to the metallic state. It was evident, however, at the time of visit that considerable quicksilver was being lost through the crudity of the operations. More efficient modes of treatment will have to be employed if the deposits are to be worked profitably for any length of time.

"The present transportation facilities are very poor and any plan for profitably working these deposits will have to reckon with the long wagon haul to Phoenix, Mesa or Globe."

CALLS ATTENTION TO FAMOUS ALUMNI OF MISSOURI SCHOOL

It was D. C. Jackling, alumnus of the Missouri School of Mines, who developed the low grade copper industry to where it will contribute about three billion dollars' worth of copper, formerly thrown away, to the world's total output. This amount already is in sight.

It was H. R. Hanley of the Missouri School of Mines who discovered the electrolytic process by which the zinc is removed from complex ore, leaving marketable copper, gold and silver uncomposed.

These are but two of the many alumni of the Missouri school who have added luster to its name. They were spoken of by Dr. A. L. McRae, director of the school, in his recent address before the Kansas City Alumni at the Y. M. C. A.

Through the Jackling organization properties with a known total of 701 million tons of ore have been developed. Only fifteen years ago, he said, this ore was considered without value.

Mr. Hanley, Dr. McRae said, is superintendent of the Bully Hill Copper Mining Co., at Winthrop, Cal. Complex ore was a problem before he developed the electrical treatment. The zinc became composed with the gold and silver, so, when it was sold for the copper, a penalty was exacted from the seller because of the presence of the other ores. By removing the zinc, not only is it saved, but the buyers now pay for the gold and silver present.

Speaking of others who have gone out from the Missouri School of Mines, Dr. McRae mentioned Durward Copeland. He was an instructor in metallurgy in the school and has gone with a South American mining company at a salary of \$1,000 a month and expenses. Emelio Diaz, superintendent of the same company, is a Missouri alumnus.

Must Wait Until Spring

No Government publications will be sent to Alaska during the winter. This is prohibited by the postal regulations. All publications which are issued during the winter, will be forwarded when the regular routes open in the spring.

EXPECT TO RETAIN COAL MARKET IN SOUTH AMERICA

Every effort is being made by the Bureau of Mines to aid the movement on the part of American coal operators to extend their market in South America. It is believed that this is a legitimate market for American coal and that more of the American product should be sold in Latin America than has been the case in previous years. This market has been dominated by England and Australia, largely due to the fact that they granted longer credit than American coal operators were willing to give. The Department of Commerce has worked out plans by which it is hoped that this objection has been overcome.

Since the opening of the war, American export of coal to South America has increased greatly and it is believed by experts here that a large portion of this market will be retained after the close of hostilities in Europe.

Director Manning of the Bureau of Mines is the author of a report on Coal for Export Trade. He has given this matter close study for many years and is taking great personal interest in seeing the extension of American markets to the southern portion of this hemisphere. His report has been translated into Portuguese and Spanish and has been circulated widely in Central and South America.

COMMONWEALTH FINDS GOOD ORE IN HITHERTO BARREN VEIN

The principal feature of interest in the new ore body found in the Commonwealth mine of the Commonwealth Mining & Milling Co. at Pearce, Ariz., was the fact that it occurred immediately above the water level of the district and in the footwall of a large vein, known as the North vein, which hitherto had been unproductive. The length of the ore body, as proved, is a little over 100 feet and its average width, 12 to 14 feet. The average value of the ore body, as mined, was about \$15 per ton, with the value mainly in silver. The ore is typically that of the oxidized ore of this mine in which the greater part of the value is present as the mineral embolite, the chloro-bromite of silver.

Edgar A. Collins is the general superintendent of the property.

STUDY OF COUER D'ALENE ORES POSTPONED INDEFINITELY

Further investigation of the ore deposits of Couer d'Alene cannot be undertaken this year. It probably will be impossible to give them further study next year, unless the Geological Survey is granted a considerable increase in its appropriation.

Due to the curtailing of the Survey's appropriation much necessary geological work has had to be suspended.

JAMES COLE ROBERTS CALLED TO SAFETY PROFESSORSHIP

To fill the Joseph Austin Holmes Professorship of Safety and Efficiency Engineering, the Colorado School of Mines has appointed James Cole Roberts of the United States Bureau of Mines. Mr. Roberts assumed his duties November 1.

It is the consensus of opinion that no man more able than Mr. Roberts could have been found for this position. Mr. Roberts has been with the Bureau of Mines since its foundation and previous to that time was with the Technological Branch of the United States Geological Survey. He has an enviable reputation as a scientist. He has been identified prominently with the safety movement and was associated intimately with Dr. Holmes in his notable efforts in this direction.

UTAH POTASH NOT BASE OF POTASSIUM CHLORATE

Potassium chlorate is usually made from potassium chloride and not from the sulphate, which is the form of the potash product now being made by the Mineral Products Company at Marysvale, Utah.

The chloride which has been used in the manufacture of chlorate in the United States has been imported from Germany. The latter product is manufactured in this country in factories specially designed for such work. It is understood that at Stassfurt, Germany, where the bulk of the German potash salts is produced, major attention is given to the production of the chloride, sulphate and other potash salts directly from the raw material as mined.

Customs drawback has been granted on shrapnel wholly or partially manufactured by the E. W. Bliss Co., of Brooklyn, N. Y., with the use of antimonial lead balls produced wholly by themselves, in whole or in part with the use of imported lead, antimonial lead, and antimony, or with the use of antimonial lead balls or antimonial lead alloy manufactured in whole or in part with the use of the above named imported materials and covered by drawback rates now existing or which may be promulgated in the future.

No Zirconium Metals Produced

So far as is known no zirconium minerals are now being produced in this country. Considerable deposits of zircon exist near Ashland, Va. These are described in a Survey publication. Zirconium oxide (baddleyite) from Brazil is sold by the Foot Mineral Co., Philadelphia, Pa.

JOHN DAY VALLEY IS INTERESTING GEOLOGICALLY

John Day Valley, in Oregon, has contributed much interesting geological data. It is not the plan of the Geological Survey, however, to make further geological investigations in this valley until topographical mapping has been done and the areal, as well as the stratigraphic geology, has been mapped in detail.

A. J. Collier, a geologist of the Survey, in cooperation with the Oregon Bureau of Mines and Geology, made an examination of a portion of this valley in 1913.

EXPECTS TO SEE SUSTAINED DEMAND FOR MINERALS

An increased demand for American mineral products and manufactures in European and English colonial markets, is certain to be a result of the war, according to the editor of the *Mining Journal* of London. In a letter to the American Mining Congress, the editor of the noted English publication states that he believes there will be greatly increased interest in the tin and rare metal industry, which are more familiar to England, than they have been to the United States.

The *Mining Journal* of London is the oldest mining paper and is the pioneer of the technical and the trade press of the world.

LITTLE PROSPECT FOR MINING COAL IN NORTH CAROLINA

From extensive investigations made by the Geological Survey in North Carolina, the general conclusion is reached that there is little prospect for the coal in that State to be mined on a commercial scale. For the most part, the deposits are thin and irregular and contain a high percentage of ash.

TWO PUBLICATIONS COVER FERTILIZER INDUSTRY

Due to the increased interest in phosphate and fertilizing materials in general, it doubtless will be of interest to many miners to know that at least two publications are issued dealing with fertilizer and fertilizing producing minerals.

The *American Fertilizer* is published at Philadelphia, and the *Commercial Fertilizer* at Atlanta, Ga. Their advertising pages show a list of the owners of phosphate lands.

Compliments Director Smith

The *Public Service Journal*, of Boston, in its current issue, compliments the address of George Otis Smith, the Director of the U. S. Geological Survey, on "Plain Writing."

BISMUTH PRICES MATTER OF INDIVIDUAL BARGAINING

Bismuth is used principally in the making of pharmaceutical preparations and in the making of cliché metals; that is, the alloys which melt at low temperatures, familiarly seen in the automatic sprinklers common in large stores and similar establishments. Bismuth prices seem to be at present a matter of individual bargaining, but are probably \$2.75 to \$3 a pound in large lots. The only known buyer of bismuth ore in this country, not a broker, is the American Smelting and Refining Company. There are numerous brokers who handle the ore, among them E. Schaaf-Regelman, 21 State Street, Battery Park Building, New York City, and David Taylor, Boston Building, Salt Lake City, Utah.

Works on Aluminum

Owing to the increasing interest in the metallurgy of aluminum it is of interest to know that there are two standard works bearing on this subject. They are: "The Production of Aluminum and Its Industrial Use," by Adolph Minet. The book is published by John Wiley & Son, of New York. The other work is: "Aluminum, Its History, Occurrence and Properties," by J. W. Richards. It is published by Baird & Co., of Philadelphia.

BUREAU OF MINES TEACHES PRINCIPLES OF RESCUE WORK

Nearly 9,000 visitors inspected the Bureau of Mines rescue cars and stations during October. Over 5,000 persons attended the lectures given under the auspices of the Bureau of Mines during the same month. During October, 261 persons were given mine rescue training, 1,050 persons were given first aid training, and 186 certificates were issued to persons who had completed training in one or the other of these branches.

Antimony Report Goes to Printer

With the exception of the annual chapters in mineral resources, the United States Geological Survey has no publication on antimony. An extended report has been written, however, and is now ready for the printer. It will be ready for distribution within the next few months.

Zinc Bulletin Coming Out

A bulletin on the origin of lead and zinc deposits of the Joplin region will be ready for distribution within the next month.

SURVEY MAPS ARE NOT ON SALE AT ALL POSTOFFICES

Some misunderstanding seems to have taken place in regard to the sale of maps prepared by the United States Geological Survey by postmasters throughout the country. Whether the postmasters act as agents of the Survey in the sale of maps is entirely a matter of their own volition. It has been stated in some papers that Survey maps will be on sale at all postoffices. This is not the case as it is entirely a matter of choice with the postmaster whether he handles the maps or not.

PREVENTION OF CRACKING IN OPALS UNSOLVED PROBLEM

Several recent discoveries of opal deposits in the West have led to frequent inquiry as to the tendency of opal to crack after being removed from the mine. The opals from the Virginia Valley region of Humboldt County, Nev., has the property of cracking to an unfortunate extent. No definite method of obviating this difficulty has been determined. Some opal miners inclose the gems in clay that the evaporation of the moisture from the stone may take place gradually. In Mexico it is a common practice to put the opal, immediately on removing it from the mine, into glycerine or other oil.

Interest in Analyses

Mineralogists and geologists in the United States and in many foreign countries are showing great interest in Prof. F. W. Clarke's work on Analyses of Rock and Minerals, which was recently published by the Geological Survey.

Kentucky and West Virginia Publications.

The coal fields of Kentucky and West Virginia are covered by the following Geological Survey publications: Bulletins 349, 541-f; geologic folios 47, 69, 77 and 184. In addition part three of the twenty-second annual report of the director of the Geological Survey contains information in regard to these coal fields.

J. E. Hoeing, of Frankfort, Ky., and Dr. I. C. White, of Morgantown, W. Va., the State geologists of their respective States, can furnish much valuable additional data in regard to these coal fields.

Bentonite Production Increases

Bentonite is being mined and marketed in Wyoming in increasing quantity. This mineral is used in making paper, in packing horses' feet and in medical preparations.

HIGH PRICES INDUCE MANY TO MINE ANTIMONY ORES

The Harshaw, Fuller & Goodwin Co., Cleveland, Ohio, is making a series of antimony salts, including oxide for use in enamels. The Chapman Smelting Co., C. Solomon, Jr., president, 409 Battery Street, San Francisco, Cal., and The Merchants' Finance Co., M. Elsasser, manager, 625 Security Building, Los Angeles, Cal., are now smelting antimony ores in this country. Many persons are producing antimony ores at present while the prices are so high.

CALIFORNIA AND OREGON INCREASE PLATINUM OUTPUT

The production of gold ore carrying platinum and palladium in 1914 from the Boss mine of the Yellowpine mining district, Clark County, Nev., added to the domestic production 110.5 ounces of platinum and 168.16 ounces of palladium.

Notwithstanding the lower price received for crude platinum in 1914 than in 1913, the production of both California and Oregon shows an increase over former years. These facts just have been published in a Geological Survey bulletin by J. M. Hill.

The
JANUARY ISSUE
of the
**Mining Congress
Journal**

*will carry the year-
end reports of the
U. S. Geological
Survey on coal and
metal production
for 1915.*

ADVANCE MAPS FURNISHED WHEN NEED IS URGENT

Advance copies of maps being published by the United States Geological Survey are very difficult to obtain. A very limited edition of these advance copies is issued. They are for the use of engineers or others who can show good cause for needing the map urgently. The advanced maps are issued as soon as the office work is completed. These copies are on the field scale, which is one-third larger than the scale of the engraved maps, but the edition is so limited, that no copies ever are available after the map is published.

DR. DOUGLAS GIVES EXHIBIT TO SMITHSONIAN INSTITUTION

Dr. James Douglas has donated to the Smithsonian Institution the Copper Queen mine exhibit, which is now installed with the display of the Bureau of Mines at the Panama Pacific Exposition.

Arrangements are under way which are expected to result in permission to use this exhibit, as well as other Smithsonian matter, at the mining show which will be given by the American Mining Congress in Chicago, late next year.

No Report on Hot Springs Rocks

The U. S. Geological Survey has not issued a report on the igneous rocks in the Hot Springs, Ark., district. Some information is contained in Water Supply Paper 145 as to the Hot Springs district.

The Geological Survey of Arkansas has published a report on the igneous rocks of Arkansas. This can be obtained by writing to Dr. H. F. Drake, State Geologist, Fayetteville

To Report on Montana Gas

Bulletin 621-F is the only publication of the Geological Survey on oil and gas in Montana. A report on the occurrence of gas at Havre, Mont., will be out in about six months.

Refer to Arizona Counties.

Publications of the United States Geological Survey, with reference to the Mohave and Yuma Counties of Arizona, are: Bulletins 580 and 620-c, 451 and 397.

The annual meeting of the Arizona Chapter of the American Mining Congress will be held at the Chamber of Commerce Building December 6.

A program has been prepared by C. F. Willis, a director of the State Bureau of Mines, and a large and enthusiastic meeting is anticipated.

LACK OF FUNDS HAMPERS HOMESTEAD DESIGNATIONS

Petitions for the designation of land under the enlarged homestead act continue to be received in large numbers by the Geological Survey. During October 1,470 petitions were received. It was only possible to act on 1,000 of them. Petitions which are awaiting action now number 5,800. If the present rate continues, it will be necessary to employ additional men. This can be done only if an increased appropriation is allowed by Congress. It is hoped, however, that this will not be necessary. There are some reasons to think that the number of petitions may decrease later.

Owing to the lack of funds considerable important field work is not being done. This is complicating the situation for the land classification board. This field work in most cases should be done by the water resources branch of the Survey. This branch has not had an increase in appropriation for many years.

GOLD VEINS OF PROMISE FOUND IN PENNSYLVANIA

While Pennsylvania has not produced any gold since 1910, information has reached Washington that gold bearing veins of promise have been found near Bangor, Pa. Pennsylvania in past years has had a spasmodic but very small production of the yellow metal.

EDISON AND FORD DISPLAY INTENSE INTEREST IN "THE MINE"

Among the visitors to "The Mine" at the Panama-Pacific Exposition recently were Thomas A. Edison and Henry Ford. The Bureau of Mines men in charge of "The Mine" stated that no visitor had displayed greater interest in the exhibits than did these two well-known men.

Tungsten Very Scarce

Tungsten users have found great difficulty in getting the ores they need, and prices can only be quoted as very high. It is known that \$35 per unit, or even more, has been paid. A unit is 1 per cent of a short ton in tungsten trioxide.

Tell of Alaskan Tin

Bulletin 622, of the U. S. Geological Survey, is the most recent information on tin in Alaska. Other bulletins covering this subject are numbered 358 and 535.

Coal Report Nearly Ready

The 1914 coal report of the United States Geological Survey will be ready for distribution in a few days.

POTASH ANNOUNCEMENT EXCITES WIDE INTEREST

Due to the recent publication of information from the office of the Secretary of the Interior in regard to the successful production of potash at Marysvale, Utah, a large number of letters are reaching the Geological Survey, asking for more details in connection with the production of potash in the United States. Officials of the Geological Survey are hopeful that within a very few weeks they will have additional information of great interest with regard to the Marysvale deposits.

CONGRESSMEN ENTITLED TO TWO COPIES OF FOLIOS AND MAPS

A misunderstanding seems to exist in many quarters as to the number of folios and maps published by the Geological Survey that may be distributed by Representatives in Congress. Each Representative is entitled to two copies of each folio and map issued during his term of office. The annual quota is about twelve folios and 200 maps.

FIVE MINE ACCIDENTS INVESTIGATED IN OCTOBER

Five mine accidents were investigated by the Bureau of Mines during October.

A fire occurred in the Minshall Mine at Fontanet, Ind. An explosion and fire took place in the Banner Mine, at Banner, Ala. A powder explosion, which resulted in the death of seventeen men, took place in the Granite Mountain Copper Mine, Butte, Mont. One person was killed by smoke from explosives in the new city sewer at Pittsburgh. Gas ignition took place in Peck Shaft, at Peckville, Pa.

BUREAU OF MINES CREW DOES GOOD WORK IN INDIANA

Detail of the work done by the Bureau of Mines rescue crew, at the Minshall mine at Fontanet, Ind., has reached the Bureau and shows that intelligent and courageous work was done. Owing to the large number of openings, the fire was unusually hard to handle, but all obstacles were overcome and the mine was sealed in record time.

MINT PAYS ONLY FOR GOLD AND SILVER IN BULLION

Only the gold and silver contents of bullion is paid for by the Bureau of the Mint. It has been reported recently that the mint would pay for platinum and other metals contained in bullion. This is not the case, however.

CANADIAN GEOLOGISTS ARE INFLUENCED BY U. S. SURVEY

Influence of the work of the United States Geological Survey on the survey of Canada, is evident in Memoir 72 on "Artesian Waters of Montreal" by C. L. Cumming, which was issued recently. This gives a classification of waters based on Dr. Chase Palmer's classification and refers also to the work of T. Sperry Hunt. Mr. Hunt for many years was the leading geochemist of Canada. The work gives a remarkably graphic representation of waters.

ARIZONA ASBESTOS LOOKS UP AS PROPERTIES ARE DEVELOPED

Continuing development of Arizona asbestos deposits brings out the fact more clearly that the deposits are extensive and that the product is of very fine quality. The only drawback to the more rapid development of these mines is the fact that they are situated at a considerable distance from the railroad.

Does Not Loan Instruments

Almost daily requests are received by the United States Geological Survey asking for the loan of instruments. There is a long-established policy of the Survey not to loan its instruments.

Arlington Map Ready in March

The Arlington quadrangle which lies in Oregon and Washington has been mapped and copies of the engraved map will be available for distribution in March.

Manning Chosen

Van H. Manning, Director of the United States Bureau of Mines, has been made a member of the Illinois Commission for mine rescue and fire prevention.

Geochemical Work in Type

The third edition of *Data of Geochemistry* is now in type and will be issued in about three months as U. S. Geological Survey Bulletin 616. It is the work of Prof. F. W. Clarke.

New Mexico Society Recognized.

Formal recognition has been granted by the United States Geological Survey to the newly organized State Geographical Society of New Mexico.

PERSONALS

Fred McLaughlin, topographical engineer of the United States Geological Survey, together with C. W. Arnold and E. R. Ireland, W. H. S. Morey, and F. W. Farnsworth, of the topographical branch of the Survey, have returned to Washington after a season in the field.

S. G. Lunde, who has been making a profile survey of the Skagit district of Washington, has returned to Washington.

W. R. Calvott, chief clerk of the Pittsburgh office of Bureau of Mines, was in Washington last month conferring with Director Manning.

Fred Graff, Jr., who has been making topographic surveys in Oregon, has returned to Washington.

Charles P. Lupton has returned to Washington after having spent the summer in field investigation in the Big Horn Basin of Wyoming.

C. G. Anderson, topographic engineer, whose field assignment during the past season consisted of making a plan and profile survey of the Snake River between St. Anthony and Henry Lake, Idaho, as well as mapping the southeast quarter of the Ammon quadrangle, has returned to Washington for the winter.

Hersey Munroe, a topographic engineer who is well known throughout the United States, has finished some important work for the Survey in Vermont, where he has completed work on the Robinson quadrangle.

Has Issued Fifty-three Kentucky Maps

Fifty-three topographical maps of Kentucky areas have been issued by the United States Geological Survey.

There can be no recovery in an action for the death of a person or employe in a mine employed in the capacity of assistant boss driver who gratuitously, or without proper authorization, undertook to aid in the work of repairing a wreck in the mine, and in so doing handled an electric wire which shocked and killed him.

Republic Iron & Steel Co. vs. Quinton (Alabama), 69 Southern, 604, p. 605; July, 1915.

NAVY DEPARTMENT RECOGNIZES VALUE OF OIL AS A FUEL

The keel of the first battleship ever designed to be propelled solely by oil fuel and electric power was laid recently—the dreadnaught *California*, with 32,000 tons displacement, 21 knots speed and twelve 14-inch guns. The electric drive and oil fuel will give the *California* a cruising radius twice as great as that of the new dreadnaught *Wyoming*.

Some of the finest warships now afloat consume oil exclusively for fuel. Among them is the *Queen Elizabeth*, whose 15-inch guns have been heard at the Dardanelles. But no foreign vessel is yet driven by electric power, and in this respect the United States Navy takes the lead.

Secretary Daniels, speaking at Brooklyn while the keel of the *California* was being laid, predicted that the Navy eventually would own its oil lands and produce, transport, refine and store its own oil supply. Steps have been taken already by setting apart oil-bearing public lands for naval use. The plans in this direction should be worked out and executed without delay, now that the superiority of oil over coal has been demonstrated, says the *Washington Post*. Storage stations should be established at every strategic point under the American flag from Eastport to Olongapo, and stations should be acquired under foreign flags at advantageous points, particularly in the Caribbean. Other nations are looking after their oil supplies, either directly or through corporations. The promising oil fields of Mexico, Colombia and Venezuela should not be permitted to pass to foreign control through the lack of enterprise of this Government and its citizens. Oil is a naval and military agent of the highest importance.

Fair Increases Gem Sales

The total value of the output of precious and semi-precious stones in the United States in 1914 is reported by D. B. Sterrett, of the United States Geological Survey, at \$124,651. The demand for gems at the Panama-Pacific Exposition resulted in an increased production of turquoise and turquoise matrix, the production in 1914 being \$13,370, as compared with \$8,075 in 1913. These gems have long been popular in the tourist trade in the West.

No discoveries of unusually fine deposits of gem minerals were made in 1914, but a few prospects for the less valuable gems were found. Among these were pink beryl in the quarry of the Maine Feldspar Co., on Mount Apatite, near Auburn, Me.; amazon stone, a variety of feldspar, near Lone Pine, Cal.; White Plains, N. Y., and on the coast of Maine; sunstone in the Apache Indian Reservation of Arizona; and turquoise deposits in Lander and Eureka Counties, Nevada.

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ing.....Philadelphia, Pa.
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J. W. Dawson.....Charleston, W. Va.

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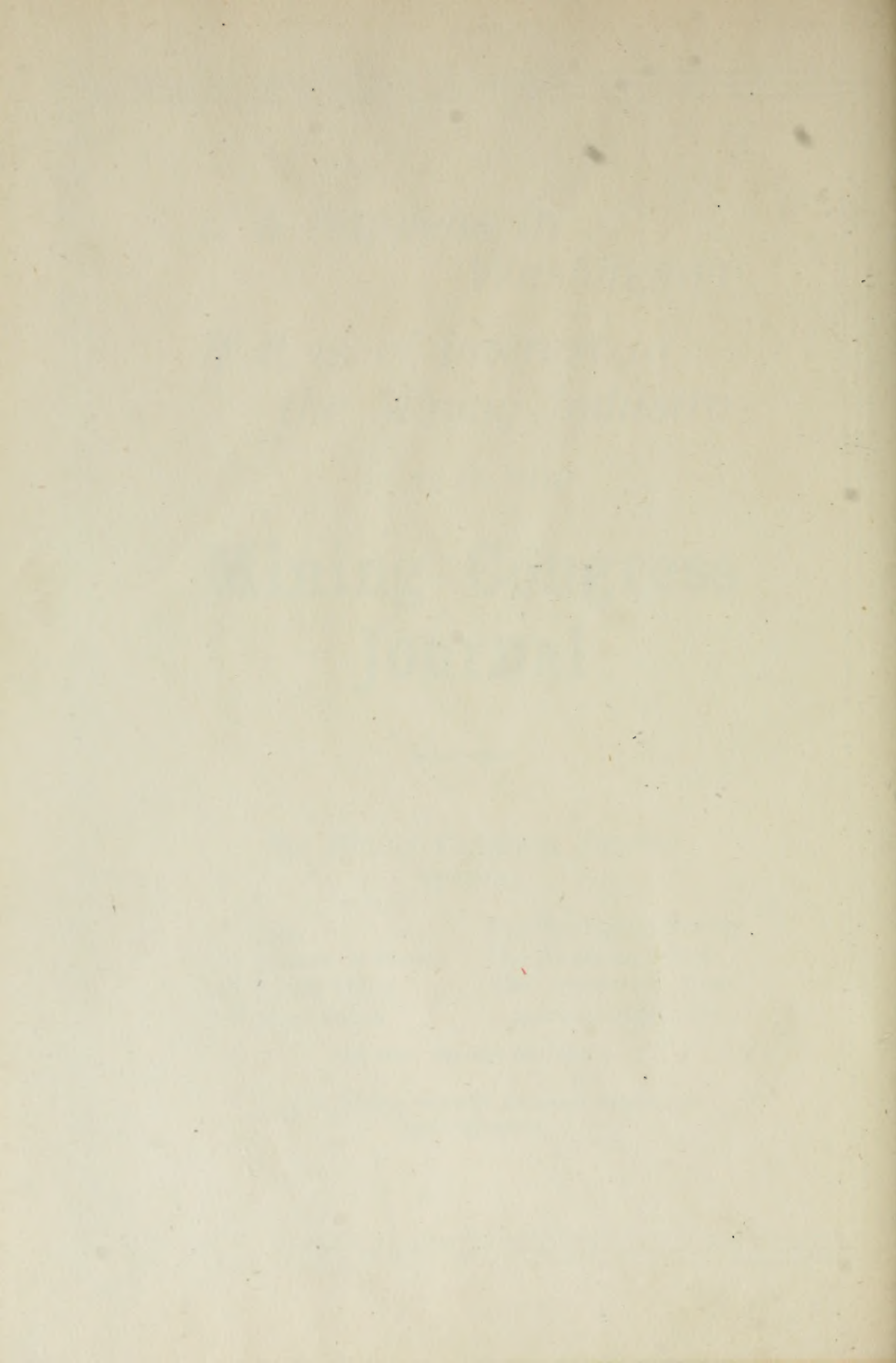
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